

# TUBE & PIPE

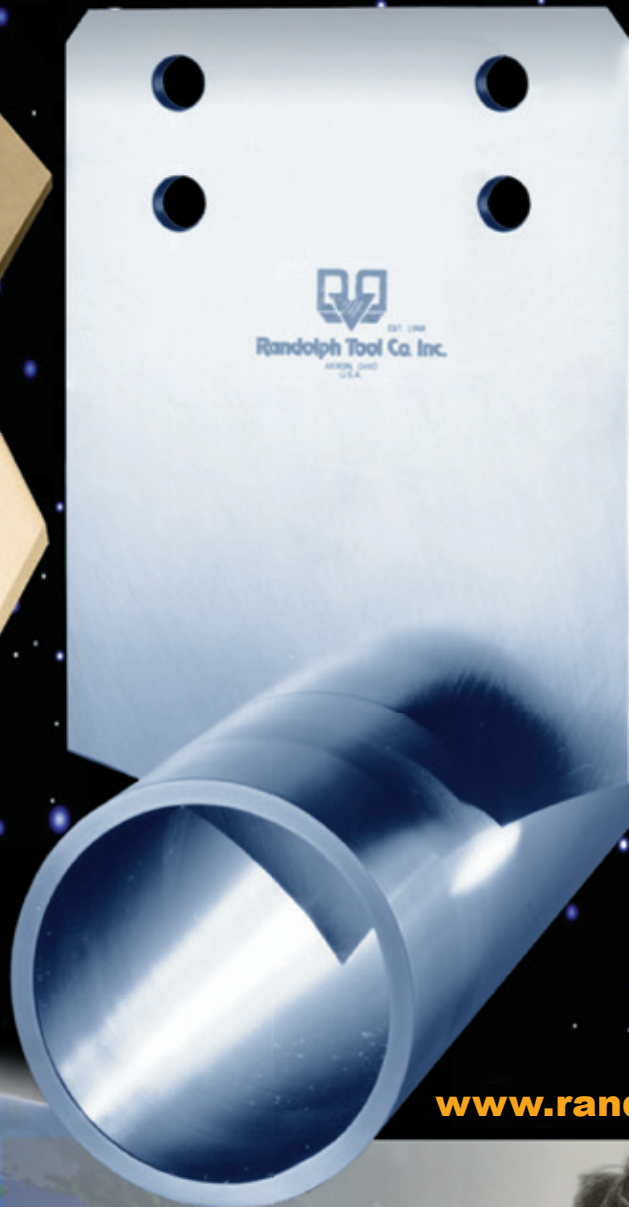
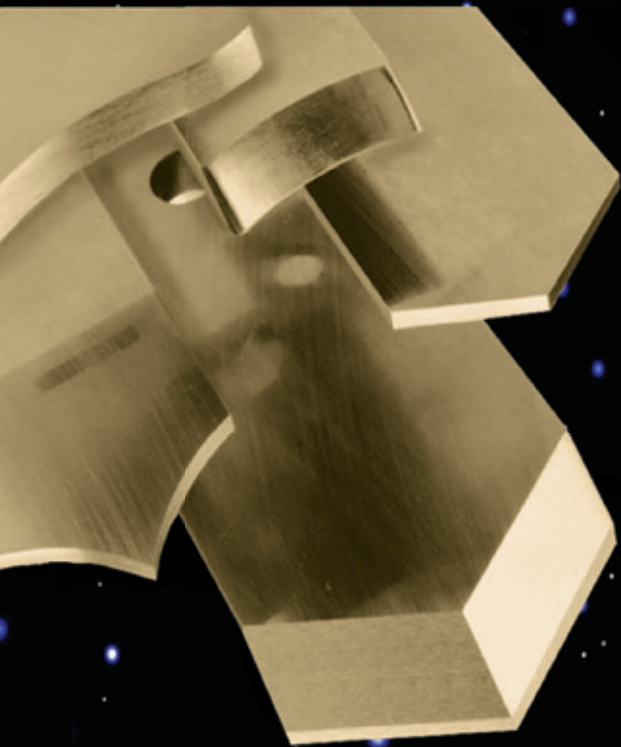
SEPTEMBER 2016

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# Technology

VOL 29 NO 5

US\$33



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- COATING LINE
- INSTALLATION & COMMISSIONING
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PIPE MILL LINE / 8"-24"Ø



FINISHING LINE / 8"-24"Ø



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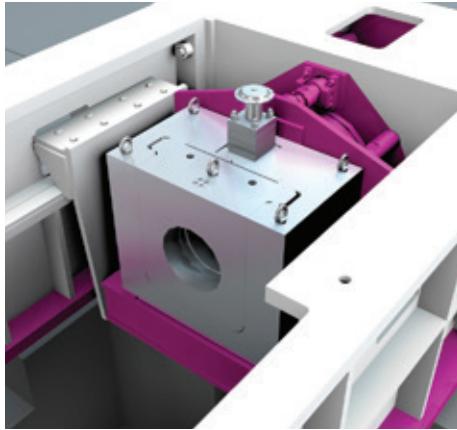
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# ULTIMATE SOLUTIONS IN TUBE AND PIPE MILLS & FINISHING

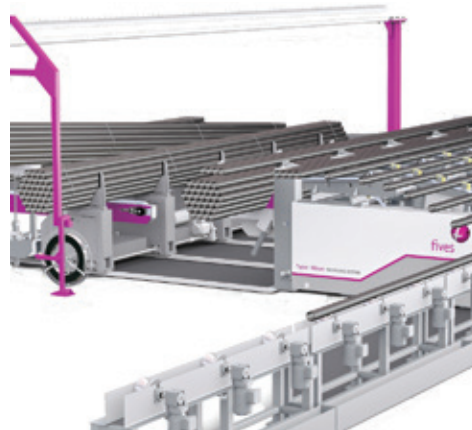
## OTO AND ABBEY TUBE MILL



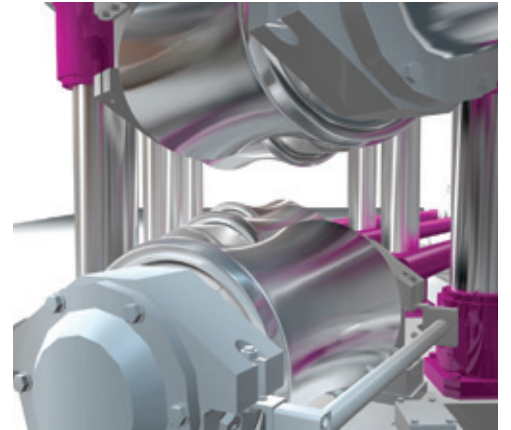
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Recognized for experience and superior technology by steel and non-ferrous manufacturers, thousands of installations are commercially present throughout the world. Installations include Bronx tube & pipe and long product straighteners, Taylor-Wilson hydrostatic pipe testing, collapse testing and leak testing machines and a complete line of end facing, rotary cut-off equipment and packaging systems. Fives' Abbey and OTO mill offer features the best in ERW pipe mills, entry systems, pipe cutoffs, Abbey slitting lines and drawbenches.

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- Bronx tube & pipe and long product straighteners
- Taylor-Wilson hydrostatic pipe testing, collapse testing and leak testing machines
- Taylor-Wilson packaging systems for tubes, squares, bars and rectangles

[www.fivesgroup.com](http://www.fivesgroup.com)

Editor	Rory McBride
Features editor (USA)	Dorothy Fabian
Editorial assistant	Christian Bradley
Production	Lisa Wright
Sales & marketing	<b>Catherine Sayers</b> <i>English speaking sales</i> catherine@intras.co.uk
	<b>Giuliana Benedetto</b> <i>Vendite &amp; Marketing (Italia)</i> giuliana@intras.co.uk
	<i>Verkauf &amp; Marketing</i> <i>(Deutschland, Österreich, Schweiz)</i> germansales@intras.co.uk
	<b>Linda Li</b> 中国大陆, 台湾, 香港以及远东地区销售代表 linda@intras.co.uk
Advertising co-ordinators	<b>Liz Hughes</b> <b>Andrea McIntosh</b>
Subscriptions	<b>Julie Case</b>
Accounts manager	<b>Julie Case</b>
Publisher	<b>Caroline Sullens</b>
Founder	<b>John C Hogg</b>

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Intras USA  
Danbury Corporate Center, 107 Mill Plain Road,  
Danbury CT 06811, USA  
Tel: +1 203 794 0444 • Email: doug@intras.co.uk

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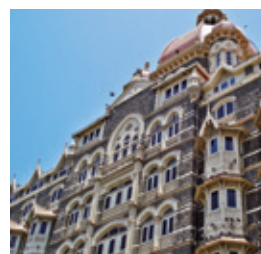
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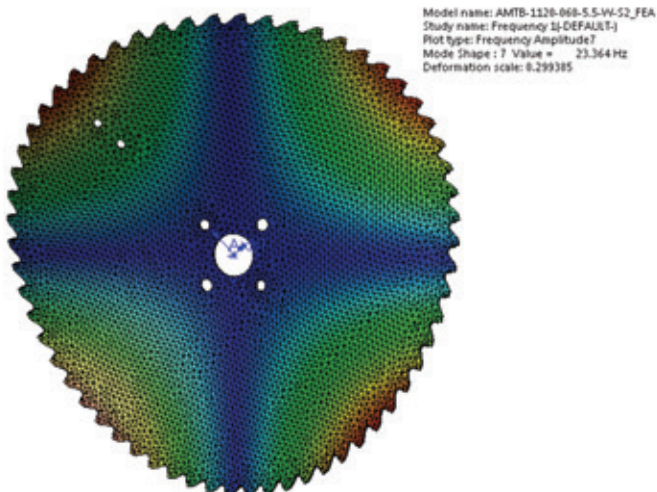
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### **Resonance – the destructive force behind carbide saw breakdowns**

by Willy Goellner, chairman and founder –  
Advanced Machine & Engineering/AMSAW



## The September Issue



Rory McBride –  
Editor

Welcome to the latest Tube & Pipe Technology magazine. This issue we have a feature on bending, end forming and swaging and a technical article written by the legendary Willy Goellner from Advanced Machine & Engineering/AMSAW on resonance – the destructive force behind carbide saw breakdowns.

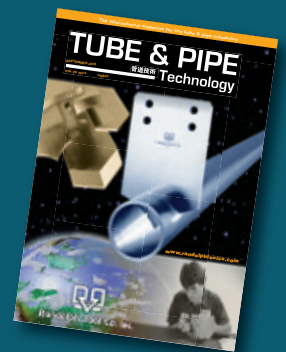
This month we also take a look at FABTECH 2016 and Tube India 2016, both shows that this issue will be distributed at along with EuroBLECH in Germany. I am returning to Tube India again in October after last visiting in 2012. It will be interesting to see how the tube machinery industry has developed over the past four years as the country has been on the cusp of becoming one of the world's strongest economies for a while now. More than 400 exhibitors from around 25 countries are expected to attend the event so it is very much an international occasion.

Next up we have the November issue, which will have features on cutting, sawing and profiling technology; tube extrusion, drawing and end forming; and drilling, piercing and punching technology. The advertising deadline for next issue is 12 September. You can contact me at: [rory@intras.co.uk](mailto:rory@intras.co.uk) if you would like to submit editorial or if you would like any information about submitting technical articles.

I hope you enjoy the magazine.

### On the cover . . .

Randolph Tool Co, Inc offers the highest quality tube cut off blades and die jaws in the industry, manufactured to your specifications to best suit your production needs by true craftsmen with the best manufacturing procedures as well as a reputation for exceeding expectations.



Randolph Tool, which was established in 1968, deals direct to save you money. Fax a drawing of the blades, dies, jaws or repair parts for your tube mills that you require. You will receive a quote immediately and will find that the pricing is extremely competitive with a fast turn around time. When you receive the blades they will be flat within 0.002 and the surface of the blade will be extremely smooth, which will help the blade last longer.

Randolph Tool also offers services such as sharpening of used blades and die jaws as well as precision machining and uses only top-grade tool steel to produce the best industrial knives and die jaws in the business. Visit [www.randolphtoolco.com](http://www.randolphtoolco.com) or email [info@randolphtool.com](mailto:info@randolphtool.com)

## Arc Energy Resources MD shortlisted for IoD award

ANDREW Robinson, managing director of UK-based Arc Energy Resources, has been shortlisted for the Institute of Directors (IoD) South West Regional Director of the Year Awards.

Mr Robinson has been at the helm of the family business since 2014, during which time the company has delivered record turnover and strong profits, achieved through workshop expansion and procurement of a number of new technologies.

Arc Energy's prime customers are in the oil and gas industry, but the company also supplies petrochemical, power generation, defence and nuclear sectors. Around 20 per cent of its work is exported.

Following his appointment as managing director of Arc Energy Resources, Mr Robinson developed a

six-year business plan emphasising 15 per cent year-on-year growth. As a result, in 2015 the company achieved turnover of £6.3mn and maintained a strong profit level.

He also initiated a number of projects, including expansion of the workshops and procurement of three new cutting-edge technologies.

Commenting on the value of the IoD Awards, Mr Robinson said, "Having received very positive exposure from winning the IoD SW Developing Director of the Year award in 2014, I am now applying for this year's IOD award to celebrate my results as Arc Energy's MD, as well as those of everyone in the business; and I wanted to build



Andrew Robinson, Arc Energy Resources managing director

on our efforts and prove we could all achieve more. This is a good time to apply for the award, as it showcases the link between my directorial input and the tangible results the business has achieved, which also gives confidence to Arc Energy's staff that the company is in safe hands, after passing on to the next generation."

**Arc Energy Resources – UK**  
Fax: +44 1453 823623  
Email: [sales@arcenergy.co.uk](mailto:sales@arcenergy.co.uk)  
Website: [www.arcenergy.co.uk](http://www.arcenergy.co.uk)

## New line for automotive precision tubes commissioned

ASMAG Austria has finalised commissioning of a complete line for manufacturing precision steel tubes up to 4"

for a customer located in the Midwestern region of the USA.

Tube bundles are separated with

a finger separator, and tubes are fed to a hydraulic pointing press. The fully automated tube handling system includes a triple pusher and a threading on unit. Tubes are drawn on a 600kN triple draw bench with high speeds.

The finishing line consists of a ten-roll precision straightener, testing tables for ultrasonic and eddy current check, multiple sawing lines, in-line chamfering units, visual inspection and a fully automated stacking, bundling and banding system.

The company chose ASMAG for a number of reasons, including the fact that it is a complete solutions provider, requiring only one point of contact for the entire line, and its reputation for high precision tube manufacturing equipment.

**ASMAG GmbH – Austria**  
Fax: +43 7616 880144  
Email: [sales@asmag.at](mailto:sales@asmag.at)  
Website: [www.asmag.at](http://www.asmag.at)





# TYKMA Electrox expands UK sales footprint

TYKMA Electrox, a supplier of industrial laser systems, has announced a new European sales and support centre in the UK, as well an expanded sales footprint in the UK through partnership with The Needham Group.

“Electrox’s roots are based in the UK and we’re excited to announce our new sales and support facility located in the modern Nexus building in the heart of Letchworth,” said Paul Mincher, TYKMA Electrox’s UK managing director. “Electrox has a rich history of providing quality laser marking products in our home market of the UK and our customers will continue to rely on us for top laser technology well into the future.

“Through our strategic partnership with The Needham Group, located in Shropshire, we are offering even greater sales and support coverage in the UK. Our UK footprint for the sales and servicing of customers has essentially doubled. In addition, customers and prospective clients can now benefit from a more diverse product portfolio from the combined organisation of TYKMA Electrox. Our vast European distributor network will also be supported from our Letchworth location.”

The Needham Group, founded by Roger Needham in 1962, has grown from a regional distributor of marker pens to a diverse group of divisions serving a wide variety of market sectors. For over 20 years, The Needham Coding division has supplied, supported, maintained and developed industrial ink jet and laser coding/etching systems.

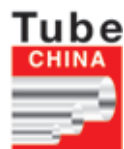
**TYKMA Electrox – USA**  
Fax: +1 740 779 9910  
Email: [sales@permanentmarking.com](mailto:sales@permanentmarking.com)  
Website: [www.permanentmarking.com](http://www.permanentmarking.com)

**The Needham Group – UK**  
Fax: +44 1948 665045  
Email: [sales@needham-group.com](mailto:sales@needham-group.com)  
Website: [www.needham-laser.com](http://www.needham-laser.com)

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# DIARY of Tube Events

# 2016



**26-29 September**

**Tube China**  
(Shanghai, China)  
International Exhibition

[www.tubechina.net](http://www.tubechina.net)



**5-7 October**

**Tube India**  
(Mumbai, India)  
International Exhibition

[www.tube-india.com](http://www.tube-india.com)



**25-27 October**

**Indometal**  
(Jakarta, Indonesia)  
International Exhibition

[www.indometal.net](http://www.indometal.net)



**25-29 October**

**EuroBlech**  
(Hanover, Germany)  
International Exhibition

[www.euroblech.com](http://www.euroblech.com)



**16-18 November**

**FABTECH**  
(Las Vegas, USA)  
International Exhibition

[www.fabtechexpo.com](http://www.fabtechexpo.com)



**29 November-1 December**

**Valve World**  
(Düsseldorf, Germany)  
International Exhibition

[www.valveworldexpo.com](http://www.valveworldexpo.com)

# 2017



**23-25 March**

**Boru 2017**  
(Istanbul, Turkey)  
International Exhibition

[www.borufair.com](http://www.borufair.com)



**17-19 May**

**Made In Steel**  
(Milan, Italy)  
International Exhibition

[www.madeinsteel.it](http://www.madeinsteel.it)

## Polysoude master classes 2016

POLYSOUDE recently held its 2016 Master Classes in Mechanised TIG Welding and Cladding, which confirmed that innovative equipment, expertise and enthusiastic participation is the perfect formula for a successful open day.

The international event was held at the Nuclear AMRC, in Sheffield, UK, where a record number of technicians, managers and industrialists attended, all eager to gain first-hand knowledge of the latest technological developments in mechanised and orbital TIG welding and cladding. The pairing of Polysoude's state-of-the-art equipment and expertise with the facilities of the Nuclear AMRC proved to be a winning combination.

The event focused on technological advancement built on historical successes

– a theme which was represented in both the presentations and the live demonstrations of Polysoude's latest, cutting-edge equipment. The opening speech was made by Keith Bridger, head of welding and materials engineering, who gave a brief history of the Nuclear AMRC and its role in supporting industrial advancement. He emphasised the importance of Polysoude's sponsorship, adding that if the Nuclear AMRC is to support industries in the new nuclear build and the oil and gas sector, it needs new equipment, such as Polysoude's innovative narrow groove TIG welding torches and weld overlay cladding systems.

Hans-Peter Mariner, CEO of the Polysoude group, introduced the UK team and the welding technicians, stressing the multi-national nature of the event, drawing on presenters and demonstrators from many countries, an ability which Polysoude possesses because of its well-established global network, worldwide resources and offices, which can be called upon at any time to respond to customers. He hoped that the equipment demonstrated would prove where the future lies in terms of manufacturing.

Dr Steve Jones, professor in joining and additive manufacturing sciences at Coventry University, noted the importance of building on past efforts and innovations in order to develop power source technology. He also stressed that effective communication between ideologists and manufacturers, during the design phase, is vital, as it enables Polysoude, for example, to design and adapt equipment perfectly to fulfil customers' unique demands.

A carousel approach allowed groups of participants to learn at first-hand the capabilities of the technology. As technicians gave live demonstrations in orbital welding, automated narrow groove welding and weld overlay cladding, Polysoude representatives explained procedures and answered the many questions.

Between the technical presentations, the versatile event programme was made complete

by the participation of Polysoude customers, who took the floor to share their experiences in the use of the equipment. Alan Robinson, of Arc Energy Resources, offered his observations on the development of weld overlay cladding technologies, from the past, when suppliers were unable to integrate cladding equipment, to the present, when Polysoude utilises a growing market by designing and personalising equipment specifically for its customers and their requirements. In particular, Mr Robinson noted the excellence of Polysoude's latest TIGer technology, in terms of speed and efficiency, stating that it will be "revolutionary".

Norman Cooper, of BAE Systems, gave a presentation on mechanised and orbital welding in critical and high-value manufacturing, which outlined the dramatic and exciting changes from manual welding to successful automated, programmable TIG orbital welding. Mr Cooper pointed out how Polysoude has risen to the challenge of heightened quality control by producing equipment of enhanced quality and reliability with zero defects.

Charles Byrne of Graham Hart Process Technology rounded off the presentations. He explained how the introduction of Polysoude technology in the form of tube sheet welding heads has improved the manufacture of heat exchangers, by guaranteeing quality and high performance, thereby raising his company's profile and validity with customers.

After whetting the appetite of participants, they were allowed to savour one of the major breakthroughs in the field of weld overlay cladding – a process designed particularly for the application of corrosion resistant alloys: the TIGer cladding system, a technology that represents the next evolutionary stage in hot wire TIG technology. The TIGer is capable of reaching much higher cladding speeds and deposition rates than the standard TIG process.

Polysoude claims that a machine fitted with the TIGer technology process will prove to be profitable and economical, allowing a 20 to 50 per cent drop in operating costs per kilogram of weld metal.

**Polysoude – France**  
Website: [www.polysoude.com](http://www.polysoude.com)



Live demonstrations in groups for discussion around specific topics



Explanations during live demonstrations in orbital welding



One of the Polysoude demonstrators explains the procedure of the narrow groove technology

Shanghai Metal Forming Machine Co., Ltd. is one of the main suppliers of Duct forming machines in China. Mainly focus metal forming machines , specializes in designing , producing metal sheet forming machines, duct forming machine,such as spiral tube forming machine,flange forming machine,gorelocker bend machine,hydraulic profile bender,riveting machine and metal sheet auto slitter lines. Our products suit for metal tube forming,metal sheet seam lock and roof roll forming,etc. And also manufacture cold steel roll forming machines,such as C-section,ceiling,roof profile, stud etc .

ان شركة شانغهاي آلة تشكيل المعادن ذ.م.م شركة واحدة من الموردين الرئيسيين للآلة تشكيل القناة في الصين. مركز أساسا آلة تشكيل المعادن، متخصصة في تصميم وإنتاج الصفائح المعدنية تشكيل آلة ، آلة تشكيل القناة، مثل أنبوب حلزوني تشكيل آلة شفة ، تشكيل ، والانحناء آلة غور خزانة هيدروليكية ملف بندر، آلة التثبيت والمعادن ورقة المشقق خطوط اوتوماتيكية. منتجاتنا تتناسب مع أنبوب معدني لتشكيل ، وقفل معدني التماس ورقة لفة تشكيل السقف وغيرها ، وأيضا تصنيع آلات الباردة لفة تشكيل الصلب، مثل سي-شكل، والسقف، هيكل السقف ، مسمار و الخ.



water jet  
Direct drive pump



Hydraulic Elbow Making Machine ATM-DCP 1500



Aluminum Foil Duct Machine ATM-A300



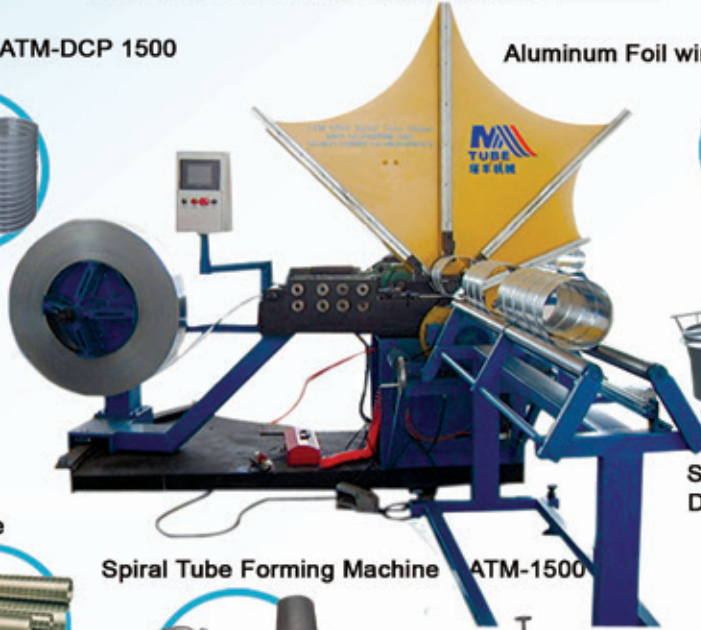
Aluminum Foil wire round Flexible duct machine  
ATM-600A



Spiral filter core making machine  
DJJY-150



PVC Flexible duct machine  
Plastic Corrugated Pipe Machine



Spiral Tube Forming Machine ATM-1500



Spiral Flexible Aluminum Foil Duct Machine ATM-300



Stainless Steel Flexible Exhaust Pipe Making Machine ATM-127



Spiral Prestressed Corrugated Duct  
Machine ATM-150

Add: Building D, 299 Tangming Road, Songjiang District, Shanghai, China

Contact person: Mr. Shuli .Pan (General Manager) Tel: +86-21-5784 2040 Fax: +86-21-5784 1819

Mob: +86-13817091187 E-mail: pan@tubemachine.com WhatsApp: Pan Shuli

Skype: pan0202000 Web: www.tubemachine.com QQ: 248372595

Our Video on the web: <http://i.youku.com/ductmachine>

## Romanian pipe manufacturer buys complete line for PO pipes up to 1.2m

ROMANIAN pipe producer TehnoWorld has installed a complete extrusion line from battenfeld-cincinnati, funded by an EU project. With this line, TehnoWorld enlarged its production capacity to include two-layer HDPE pipes with diameters up to 1.2m at its facility outside the city Falticeni, Jud Suceava. The majority of the extrusion lines for smooth and corrugated pipe at TehnoWorld's facility are entirely from or include major components from battenfeld-cincinnati.

"It has been a great opportunity for TehnoWorld to collaborate again with battenfeld-cincinnati, because we have reached for new horizons in our field of activity," said Ing Iustinian Pavel, director of TehnoWorld. "battenfeld-cincinnati is a reliable and valuable business partner for us, with whom we have worked in the past to develop our production capacity. battenfeld-cincinnati has demonstrated the high quality of its service and products while helping us to develop further and raise our standards of technology and flexibility."

The 1.2m line produces pipe in the pressure classes SDR 11, SDR 17 and SDR 26. It is equipped with a soLEX 90-40 as its main extruder and a uniEX 45-30 as co-extruder. For the addition of colour stripes, battenfeld-cincinnati delivered a small, space-saving coEX 30-25 co-extruder, installed on a die trolley with a swivel arm for easy movement.

The pipe head is equipped with an adjustable die aperture, which consists of a conically shaped mandrel and an outer sleeve moving in longitudinal

direction. It covers pipe diameters from 900 to 1,200mm and – with an extension – also diameters from 500 to 800mm (SDR 11 to SDR 26).

The helix 1200 VSI-TZ+ pipe head reduces sagging and pipe ovality for thick-walled pipes, even at high line speeds, thanks to its two-step distribution concept. The active intensive melt cooling and inner pipe cooling operate mainly with ambient air, minimising operating costs and maintenance requirements.

The internal pipe cooling also reduces the cooling length, which is of great importance for TehnoWorld due to limited hall space. With the new line from battenfeld-cincinnati, the company can run 1.2m pipes (SDR 17) with throughputs above 1,500kg/h and a cooling length of less than 40m.

The cooling section includes two vacStream 1200-6 vacuum tanks and four coolStream 1200-6 cooling tanks, and is complemented by the rest of the line components: haul-off (pullStream R 1200-10 VEZ), start-up aid (startStream AFH 60), cutting unit (cutStream PTA 1200) and tip table (rollStream RG 1200).

TehnoWorld has been manufacturing polyethylene and polypropylene pipes since 2005, and has a production capacity of more than 70 tons per day.



View of TehnoWorld's production hall, with the new 1.2m line from battenfeld-cincinnati on the left side (Photo credit: © TehnoWorld)

The battenfeld-cincinnati group, with production facilities in Germany, Austria, China and the USA, manufactures energy-efficient, high-performance extruders and complete extrusion lines. It offers tailor-made solutions for a wide range of applications in the areas of pipe, profile, sheet, thermoforming sheet and pelletising.

The solutions are created from a large portfolio of single, twin screw and planetary roller extruders, tooling, downstream equipment, calenders and calender feeding equipment.

**battenfeld-cincinnati** – Germany

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Website: [www.battenfeld-cincinnati.com](http://www.battenfeld-cincinnati.com)

**SC TehnoWorld Srl** – Romania

Fax: +40 230 206 090

Email: [office@tehnworld.ro](mailto:office@tehnworld.ro)

Website: [www.tehnworld.ro](http://www.tehnworld.ro)

A 1.2m pipe with colour stripes produced on the battenfeld-cincinnati line (Photo credit: © TehnoWorld)



The cutStream PTA 1200 cutting tool can cut both swarfless or with swarfs, depending on the application (Photo credit: © TehnoWorld)





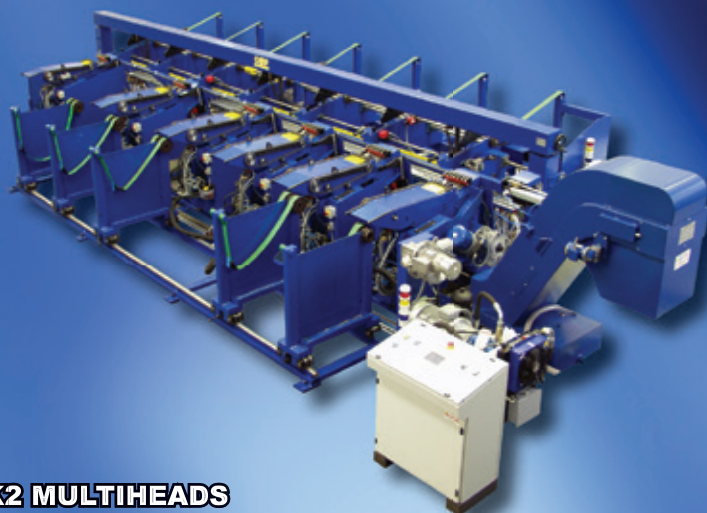
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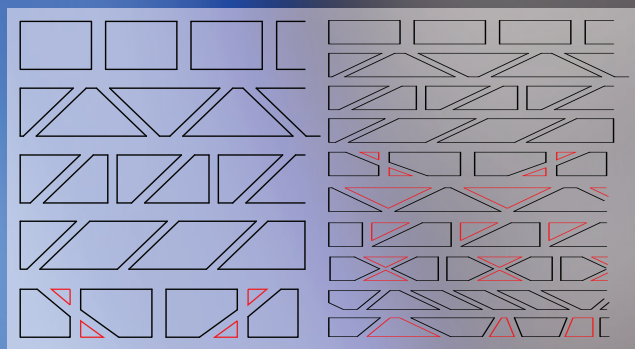
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## ADS expands manufacturing footprint

ADVANCED Drainage Systems, Inc (ADS), a global manufacturer of water management products and solutions for commercial, residential, infrastructure and agricultural applications, is to build a new pipe manufacturing plant in Harrisonville, Missouri, USA, approximately 40 miles south of Kansas City, to better serve growing customer demand in the region.

Joe Chlapaty, chairman and CEO of ADS, commented, "We are pleased to announce our plans to expand our manufacturing footprint in Harrisonville, MO. In addition to freeing up production capacity in the Midwest for our pipe products, the new plant will allow us to

meet the growing demand for all of our products in the region while helping to reduce the time and cost of delivery to our customers."

The 65,000ft<sup>2</sup> plant is scheduled to open during the first half of 2017, and will produce the company's single- and dual-wall, high-density polyethylene (HDPE) and polypropylene pipe. The facility will also operate its own fleet of dedicated delivery trucks, and the full portfolio of ADS products will be available at the site, including ADS N-12<sup>®</sup> HDPE pipe, HP Storm and SaniTite<sup>®</sup> polypropylene pipe, StormTech chambers, Inserta Tee<sup>®</sup> and other fittings, Nyloplast<sup>®</sup> drain structures, and geosynthetic fabrics and grids.

ADS manufactures thermoplastic corrugated pipe, providing a comprehensive suite of water management products and drainage solutions for use in the construction and infrastructure marketplace. Its products are used across a broad range of end markets and applications, including non-residential, residential, agriculture and infrastructure applications. Founded in 1966, the company operates a global network of 61 manufacturing plants and 31 distribution centres.

**Advanced Drainage Systems, Inc – USA**

Website: [www.ads-pipe.com](http://www.ads-pipe.com)



*ADS N-12 large diameter corrugated HDPE pipe is one of the products that will be manufactured at the new plant*



*The new ADS plant will include a fabrication operation*

## Lincoln Electric announces new vice-president

THE Lincoln Electric Company, a subsidiary of Lincoln Electric Holdings, Inc, has promoted Daniel McMillin to vice-president finance of the Americas welding segment, effective immediately.

Mr McMillin succeeds John Bronstrup, who is now president, business development for the Americas welding segment.

As vice-president of finance for the Americas welding segment, Mr McMillin will be responsible for leading the regional finance and accounting operations and he will support the development of businesses within Americas welding.

"Dan's broad financial background at Lincoln Electric and deep understanding

of our business, strategy and culture makes him a great fit to lead the Americas welding finance team," said Geoff Allman, senior vice-president, corporate controller.

Mr McMillin has more than 25 years of finance and accounting experience and joined Lincoln Electric in 2004 as the director of financial reporting. During his 12-years at Lincoln Electric he has held several finance leadership positions, including european finance director, and was most recently international controller. Prior to joining Lincoln Electric he held various finance and accounting positions with RTI International Metals, Inc and Coopers & Lybrand. Mr McMillin holds a bachelor's degree in accounting

from Ohio University and is a certified public accountant.

Lincoln Electric is a leader in the design, development and manufacture of arc welding products, robotic arc welding systems and plasma and oxy-fuel cutting equipment, and has a leading global position in the brazing and soldering alloys market. Headquartered in Cleveland, Ohio, USA, Lincoln has 48 manufacturing locations, including operations and joint ventures in 19 countries, and a worldwide network of distributors and sales offices covering more than 160 countries.

**Lincoln Electric – USA**

Website: [www.lincolnelectric.com](http://www.lincolnelectric.com)

## MAC appoints president/CEO

NON-DESTRUCTIVE testing technology company Magnetic Analysis Corp (MAC) has promoted Dudley M Boden to president and chief executive officer. Having spent 15 years as MAC's vice president – sales and marketing, Mr Boden brings an in-depth understanding of the company's test systems and customer inspection needs.

Mr Boden is now focused on broadening the firm's product offering in order to take advantage of new opportunities that have arisen. "Boden's work in expanding overseas operations and strengthening the sales force and office procedures is providing a firm basis for future successful initiatives under his leadership," commented MAC chairman William S Gould 3<sup>rd</sup>.

"As a company, the concept at MAC is that we are more than just an equipment manufacturer," said Mr Boden. "To make NDT work you need both equipment and people. Combining these two things is our forte. We partner with the customer

to figure out what their real needs are and what the right equipment is for their application. Then we work with them to configure the test system and make it work in a way that is suitable and beneficial for them."

Prior to joining MAC, Mr Boden was a director and general manager of Minolta Corporation's instrument systems division, where he was responsible for production and sales of quality control equipment. He holds a degree in photographic science and instrumentation from the Rochester Institute of Technology.

MAC specialises in ultrasonic, eddy current, electromagnetic and flux leakage systems for testing wire, tube and bar. The company has been designing and manufacturing non-destructive test systems for the metals industry since 1928, and is currently based in Elmsford, New York, USA, with additional manufacturing plants in Boardman, Ohio, USA, and Östersund, Sweden.



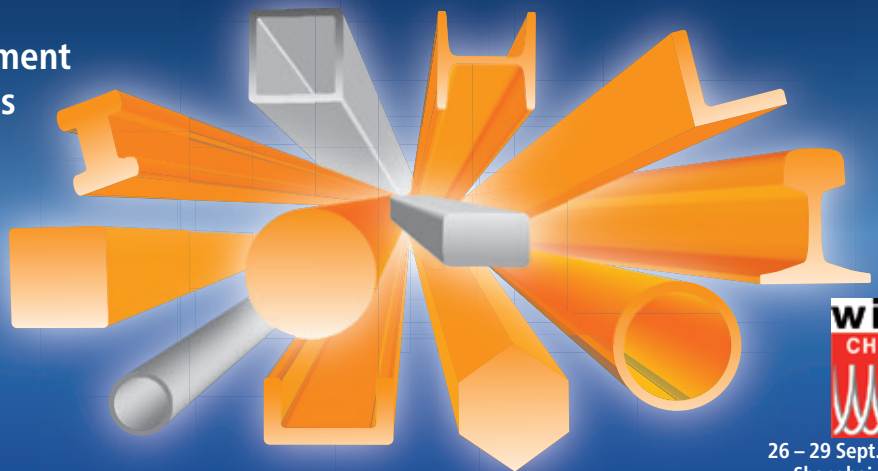
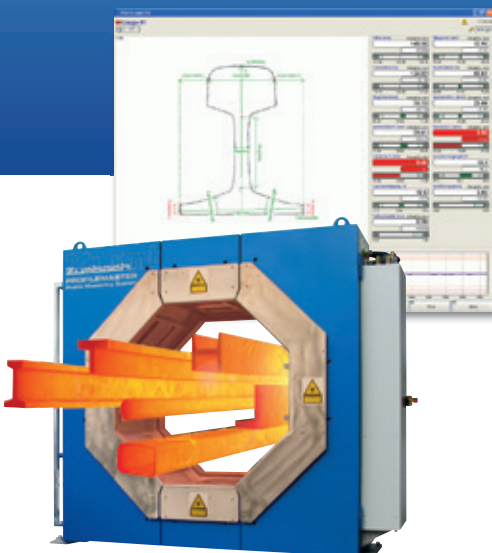
*Dudley Boden, new president/CEO of Magnetic Analysis Corp*

**Magnetic Analysis Corp – USA**  
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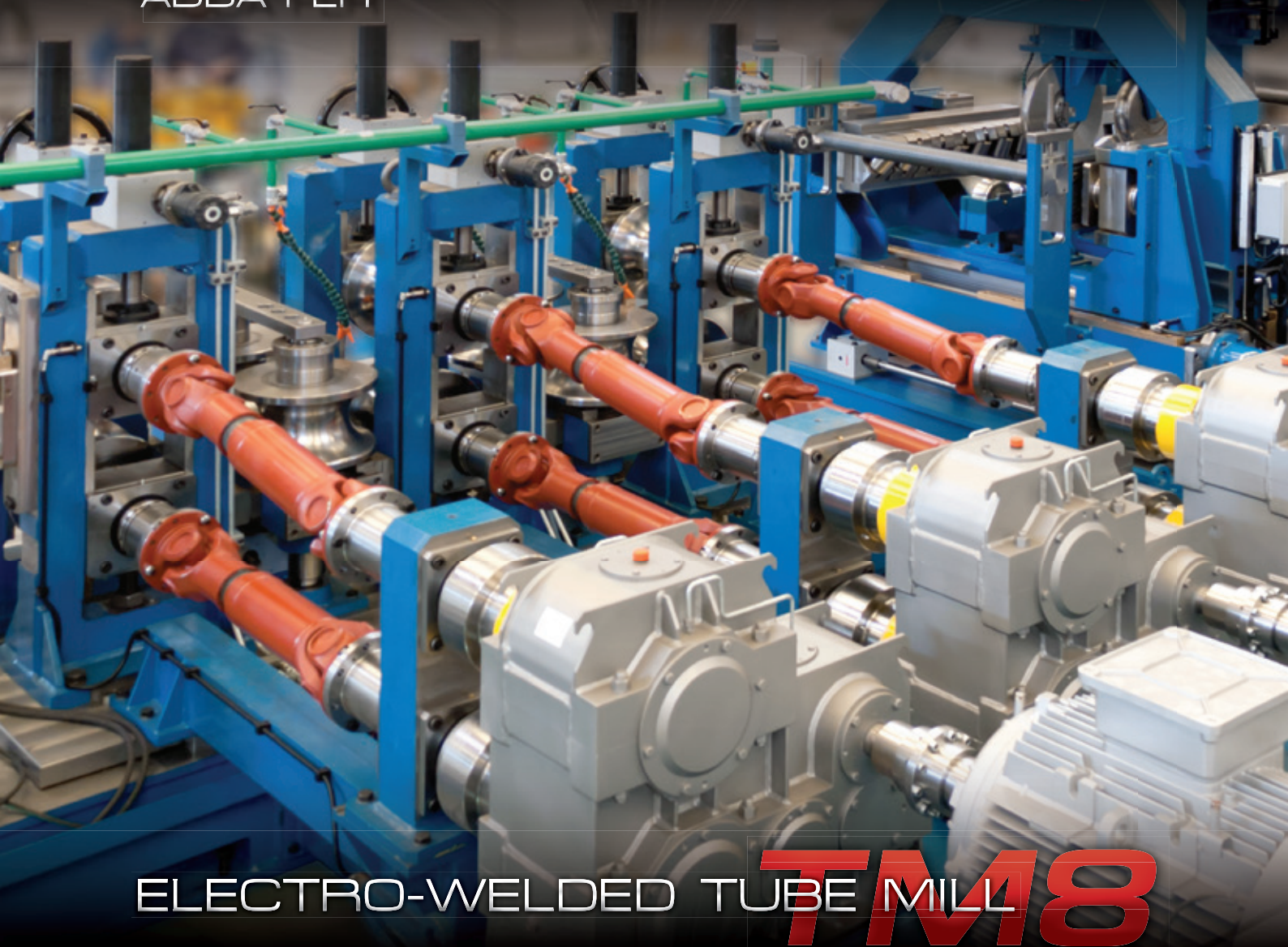
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## Indian tube and metallurgy trade fairs

WIRE & Cable India will be held at the Bombay Exhibition Centre in Mumbai, India, from 5 to 7 October. Co-located with Metallurgy India/Tube India International as well as India Essen Welding & Cutting (organised as a joint event by Messe Düsseldorf India and Messe Essen GmbH), all four trade fairs present technology highlights from the metallurgy, wire and cable industries and the tube industry as well as from the industrial areas of cutting and welding for the sixth time.

Tube India International and Metallurgy India are organised and held by Messe Düsseldorf GmbH and its Indian subsidiary Messe Düsseldorf India as well as the Confederation of Indian Industry. The organisers expect a total of some 400 exhibitors from 25 countries. Many Indian and international companies have already registered for participation. There will again be group participations from Italy, Austria, France and China.

On display at Wire & Cable India will be machines and plants for wire production and processing, forming technology, spring-making technology, cable and stranded wire machines, tools and auxiliaries for process engineering, measuring and control technology, all types of wires, rolled wire, bare wire, bars, sheet metal and special wires and cables.

Tube India International presents the complete range from tube production to tube processing as well as the tube trading segment. The spectrum includes raw materials, tubes and accessories, tube manufacturing machinery and used machinery as well as tools for process engineering and auxiliaries, measuring and control technology.

Metallurgy India presents the entire portfolio of the metallurgical industry with electrical and automation technology systems. Together the three trade fairs cover the complete spectrum of metal working and processing.

Conceptual and technical support for the Indian trade fairs comes care of the international associations IWCEA (International Wire and Cable Exhibitors Association), IWMA (International Wire & Machinery Association), ACIMAF (Italian Wire Machinery Manufacturers Association), WCISA (Wire and Cable Industry Suppliers Association) USA and ITA (International Tube Association).

The Indian associations SWMAI (Steel Wire Manufacturers Association of India) and AIWMA (All India Weldedmesh Manufacturer's Association) are also at hand with their country-specific insider know-how.

Germany is India's biggest trading partner in the EU. The trading volume between Germany and India has tripled over the past ten years. The demand for plant and machinery is moderate but the Indian automotive industry reports positive sales figures.

In the construction sector strong investment in civil engineering for streets, canals, bridges, railroad and energy projects has had a positive impact on the business climate. Nevertheless, the demand for tubes in India continues to be high despite the global steel crisis.

**Tube India International 2016**  
Website: [www.tube-india.com](http://www.tube-india.com)

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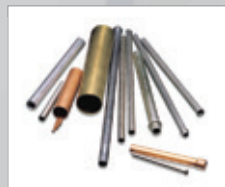


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## Remembering Francesco Mulazzi of Mandelli Sistemi SpA

MANDELLI Sistemi SpA has announced the sad news that Francesco Mulazzi, mechanical design manager, has recently and prematurely passed away.

The company hopes to remember him by helping to create opportunities for the study of machine tools for young mechanical engineers.

It is with this in mind that the company, located in Piacenza, Italy, and which



Francesco Mulazzi

has been making machine tools in Italy and worldwide for more than 80 years, has made an announcement for a scholarship named after Ing Francesco Mulazzi for students who will be attending the Laurea Magistrale in mechanical engine-

ering during the academic year 2016-2017, specialising in "Machine Tools and Manufacturing Systems" c/o Politecnico di Milano, Piacenza Branch.

"The student who will be awarded the scholarship after graduating in Laurea Magistrale and will have the opportunity of dealing with the labour market thanks to the possibility of carrying out a six-month training internship c/o the Mandelli Sistemi Plant in Piacenza for which an allowance will be given," said Saverio Gellini, Mandelli CEO.

"Our intention is to maintain the memory of our colleague who passed away by associating him with the continuous training of young engineers interested in the machine tool world. This same thought was also shared by Francesco's wife Tiziana and his young daughter Manuela, she too being a university student, who are both very

much in our thoughts," said Andrea Riello, president of Mandelli Sistemi and of Gruppo Riello Sistemi to which the company belongs.

A scholarship will be awarded to the winner of the competition – which has been publicised on the institutional Mandelli websites as well as on that of Politecnico di Milano Piacenza Branch, of MUSP Consortium of Piacenza and of the Unione Costruttori Italiani di Macchine Utensili (UCIMU) – equal to €5,000 divided into two awards.

This competition will be repeated every year so that the Ing Francesco Mulazzi Scholarship will become associated with helping the best young machine tool engineers advance their careers and training.

**Mandelli Sistemi SpA** – Italy  
Website: [www.mandelli.com](http://www.mandelli.com)

## Fives and Gazpromtrubinvest commission Bronx finishing floor for Russian pipe factory

GAZPROMTRUBINVEST, a Russian pipe manufacturer and subsidiary of Gazprom, and Fives, an international engineering group, have successfully commissioned Bronx finishing floor equipment for a new pipe making facility in Volgorechensk, Russia.

Gazpromtrubinvest commenced the new project with planned production capacity of 350,000 tons per year in 2012. The new facility is to produce longitudinal welded corrosion proof pipes with a range of diameters 127-426mm for different industries.



Fives designed and supplied the following equipment for the finishing floor: two Bronx ten-roll straightening machines, Taylor-Wilson single and double head hydrotesters, Taylor-Wilson leak tester and two heads pipe facing machine.

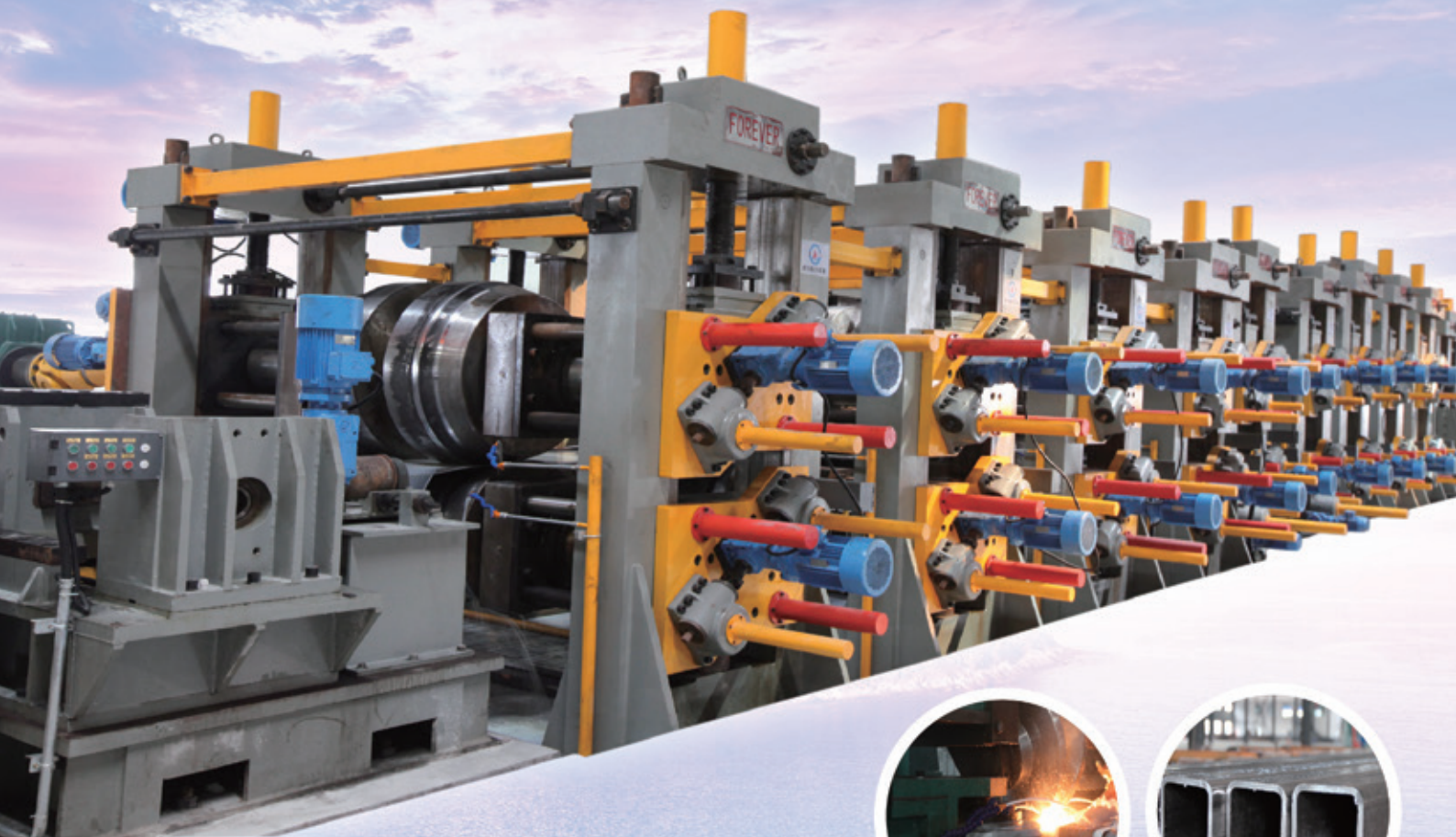
For the supplied equipment, Fives provided a full set of services including engineering, installation and start-up supervision as well as training. The final acceptance act for the supplied equipment was signed in September 2015. Today, the new pipe making facility makes a wide range of pipes, which pass strict quality control at each stage of the production process.

Fives has been designing and supplying a complete range of solutions for tube manufacturers for more than 120 years.

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## Danobat equipment in new threaded pipes factory

INTERNATIONAL company Tubos Reunidos has a new facility, complete with Danobat machines for the manufacture of threaded pipes and hoses. The project is the result of a joint venture between Tubos Reunidos and Marubeni. The premises total around 31,500m<sup>2</sup> and include a workshop where the Danobat machines manufacture the threaded pipes.

The new production line will manufacture highly technological pipes, specifically threaded for drilling and production of oil and gas wells. Danobat machines finish the pipes with patented premium threads that are claimed to provide superior performance compared to standard threads.

"They are perfectly suited for work on sites at 4,000 or 5,000m depth," said Carlos San Martín, director of technology and development of Tubos Reunidos Industrial. Among other

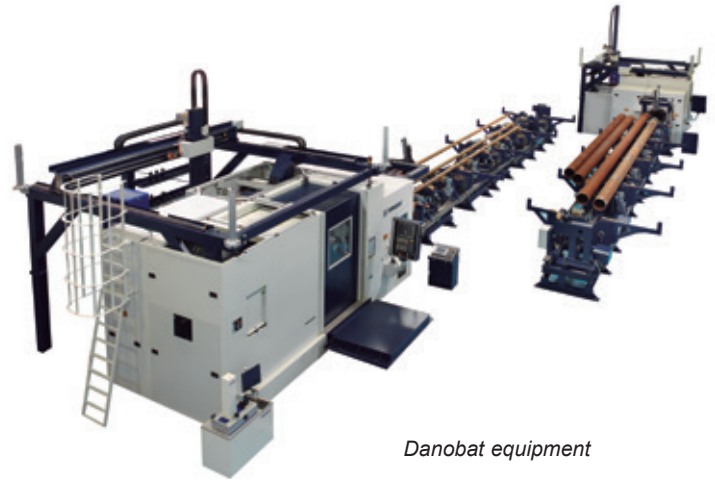
facilities, the line will have several horizontal Danobat TTB lathes for machining of pipes.

Important features of this machine include rigidity, high production and chip removal capacities during turning and threading operations.

It is provided with load-unload systems, positioning channels and solutions with specific tools for turning pipes.

The line will also be equipped with Danobat band saws to cut the pipes, offering a high value-added comprehensive solution to Tubos Reunidos.

In the new factory, Danobat machinery will also produce the necessary special couplings to join the pipes in the well.



Danobat equipment

The company will have sophisticated Danobat lathes to machine the couplings, in addition to a robotised load-unload system, obtaining a near fully automated production system with minimum operator intervention.

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## Mill investment helps Tata Steel break Gulf of Mexico record

MORE than 140km of pipeline manufactured at Tata Steel's recently enhanced double submerged arc welded (DSAW) mill has becoming the deepest to be laid in the Mexican section of the Gulf of Mexico.

The company was awarded a contract to supply 457mm OD x 28.6mm WT API 5L PSL2 X65MO line pipe from its large diameter 42" DSAW mill in Hartlepool, UK, for the development. The project marked the first time that a pipeline had been laid at water depths greater than 3,000ft in the Mexican section of the Gulf. Tata Steel was selected for the project due to its experience in the manufacture of small diameter and thick wall deep-water line pipe.

The mill has been the focus of significant recent investment to enhance technology and processes and increase power efficiency.

More than 125 improvements were completed in 2015 to strengthen its overall operational and performance capability.

The improvements include upgrades to welding equipment using the latest closed loop digital weld control technology to deliver greater weld stability, reduced repair rates and total traceability of the process.

Tata Steel has also invested in a laser profiling system to provide a 3,600-point profile to monitor pipe straightness and provide a full dimensional survey of the pipe end. This data can be used to ensure minimum 'hi/low' in girth welding for high fatigue and other applications.

Energy efficient inverters have replaced more than 50 traditional transformers/rectifiers on production lines to enable quick and repeatable set ups while cutting the mill's electricity demand by nearly a third,

allowing Tata Steel to produce more pipe with less energy.

The mill's 'O' press control has been upgraded to optimise the forming process, ensuring uniform pressing along the full length of pipes to achieve optimum pipe shape. This has benefits for deep-water operations, as both the shape and balancing of the 'forming ratio' of the pipe are critical for deep-water collapse resistance.

Richard Broughton, commercial manager, energy and power, Tata Steel, said, "The overall benefit of the investments can be seen in the welding quality performance achieved during the project in the Gulf of Mexico. Where small diameter and thick wall pipe is typically more challenging, on this project a combined repair rate of 0.25 per cent was achieved. This was delivered not only due to the investment in welding technology, but also through a programme of continuous improvements in the welding area, which has seen similar developments across many sizes of pipe."

**Tata Steel Europe Ltd – UK**  
Email: [feedback@tatasteel.com](mailto:feedback@tatasteel.com)  
Website: [www.tatasteeleurope.com](http://www.tatasteeleurope.com)



Pipes at the Hartlepool mill

## New cold rolling mill for Shanghai STAL's high-end products

FIVES, a global industrial engineering group, and Shanghai STAL Precision Stainless Steel Co, Ltd have signed a contract for the design, manufacture and supply of a new 20Hi cold rolling mill.

The mill is designated for STAL's new stainless steel line in Shanghai's Xin-Zhuang industrial zone in China.

STAL, a joint venture between USA's Allegheny Ludlum and China's Baosteel Group Corporation, is specialising in manufacturing and marketing precision-rolled stainless strips.

Aiming to increase its current capacity of precision stainless steel strips, STAL has decided to build a new cold rolling

workshop, which includes a new bright annealing line and a new 20Hi cold rolling mill, to be commissioned in 2017.

Fives will design and deliver to STAL the new 20Hi cold rolling mill with a production capacity of just over 80,000 metric tons per year.

From input strip 1.5mm thick it will be able to roll strip down to 0.04mm and up to 1.2mm thick. Maximum strip width is 1,250mm, and it will be able to produce at the minimum thickness on the full width.

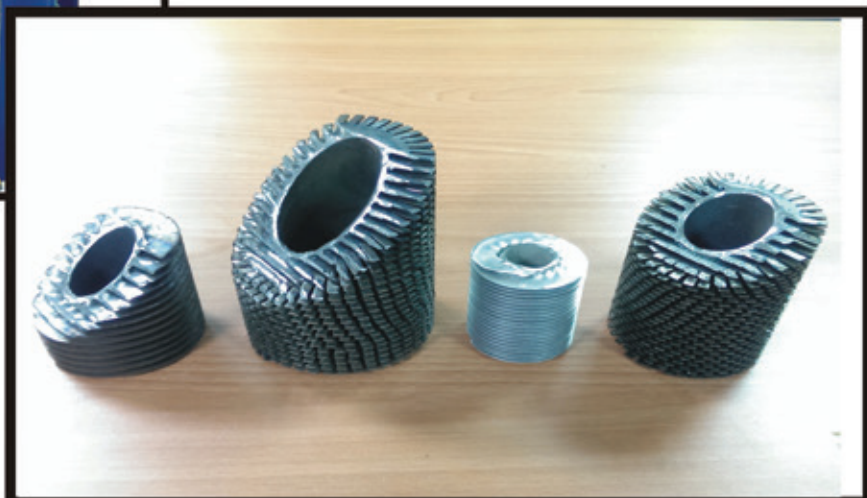
Terminal equipment for the mill will be produced locally by Fives's subsidiary in China. The design of the mill, which combines ultra-thickness and a full

width, is claimed to be currently unique. The new line and mill will produce ultra-thin stainless steels for high-end applications such as smartphones and tablet computers.

Fives has been specialising in cold rolling mill design and manufacturing for more than 60 years, being a technological pioneer and a partner for international steelmakers worldwide. In 2006, Fives designed and delivered to Shanghai STAL a 20Hi cold rolling mill for its Huajin Plant.

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## Fusion machine selected for desert project

MCELROY'S MegaMc® 1600 fusion machine has been selected to fuse pipe in support of drought mitigation activities being undertaken by the US Department of the Interior's Bureau of Reclamation. As a part of an ongoing initiative to preserve water resources during the West's ongoing and historic drought, Reclamation is updating aged infrastructure to be able to achieve greater efficiency out of its water delivery systems.

Materials for an effort to replace aged and leaking concrete water delivery structures were delivered in March near the Mexico border in San Luis, Arizona. By fusing 48" HDPE pipe to replace a failing 42" concrete pipeline, the government will be able to make beneficial use of pumped drainage water, which is otherwise harmful to the area's agricultural economy.

R&B Company of San Jose, California, a utility supply solutions company, supplied the machine that would best fit the application, along with 40,000ft

of pipe. It also provided certified fusion operator training for the maintenance crew from Reclamation's Yuma office.

The MegaMc 1600 wheeled fusion machines have been used on large-diameter pipe jobs in a variety of applications worldwide. They feature four-jaws with more than 80,000lb of fusion force, allowing operators to overcome heavier drag forces and fuse thicker-wall pipes. Components including the jaws, pipe lifts, heater and facer are hydraulically powered for smoothness and ease of use.

When considering a pipe material, a multi-disciplinary team of engineers analysed many types, including steel and reinforced concrete, but selected JM Eagle's PE 4710 SDR 17/IPS 125, recommended by R&B for its strength, durability and flexibility. Properly fused HDPE pipe is leak-free and resistant to corrosion and weather. Studies indicate it can last 100 years.

McElroy's engineering support team was on site the first day of the job to re-

instil best practices in the operation of the machine and to spend one-on-one time with each of the fusion operators, to review each step of the fusion process. Safe operation of the facer and heater were stressed, and McElroy's DataLogger® 5 was used to record the parameters of the fusion process, to ensure and document that the operator produced a quality, leak-free joint.

McElroy also assisted with job-site setup utilising a series of pipe stands, strategically situated on either side of the machine for support, to prevent pipe damage, reduce drag and boost productivity. The crew will perform a total of around 600 pipe fusions for the six-mile pipeline, and are planning on being able to perform 12 fusions per day. The first phase is expected to be completed later this year, with two other larger phases to be completed by 2018.

**McElroy – USA**

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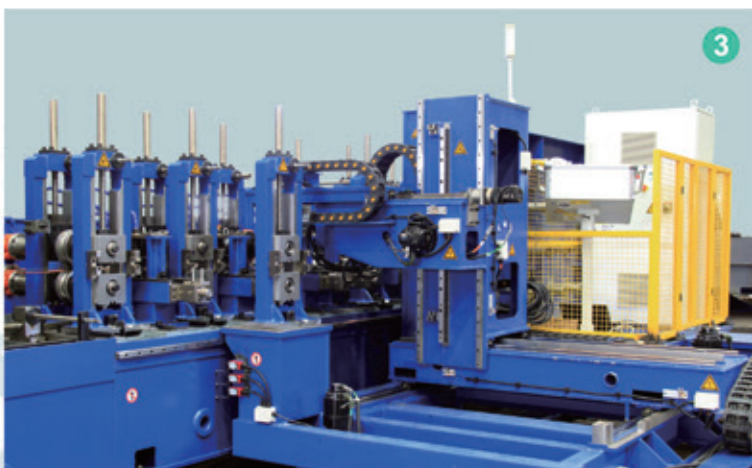
A mill of  $\phi$  10~32mm/t0.6~2.0mm, with the ability to produce pipes at a speed of 240 meters per minute

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## Innovative FL300 tube laser installed in UK

AN innovative new generation FL300 tube laser, which is the first of its kind in the UK, has been manufactured and installed by TTM Laser at Premier Lasertube.

The purchase of the new laser opens up a number of exciting new opportunities for Premier Lasertube's customers as the Leeds-based company can now create innovative, highly accurate and repeatable products and solutions at its laser processing services in the UK. The new laser also has the flexibility to be able to adapt in just a few minutes from cutting mild steel to stainless steel.

With a cutting range from 12 to 305mm dia for circles, and from 12 to 250mm for square and rectangular tubes as well as a wide range of open sections including angles, the possibilities are almost endless.

In addition, Premier Lasertube has benefited from bespoke CAD and CAM software that allows it to draw and design in 3D, ensuring that the products match its customers' exact requirements, no matter how demanding. Combined with the additional benefit of product

continuity the company can now ensure that each product it produces is 100 per cent identical.

With an extensive stock range at its disposal including advanced prototypes, special one-off items and the potential to undertake full product re-designs, customers can now have their products designed and on the market extremely quickly.

FL300 is a laser tube cutting machine with 3D or 2D cutting head that allows three-dimensional machining of pipes and profiles in a diameter range of 20-305mm, squares between 20 and 250mm, angles to 200x200mm maximum and channels to 230x90mm maximum.

Automated bundle loading from the rear, or single bar from the front, via multi-point chain system with a maximum length 12.5m with a bar weight of 60kg/m maximum is achievable.

The materials are supported through the cutting process by three mandrels to multi-preset ejection points to a maximum finished part length of 12m.

The LT8 is a 3D laser cutting machine producing high quality and extremely precise laser cut parts.

Tube diameters from 12 to 220mm and a bar weight up to 35kg/m, and squares to 200mm and channels to 180x75mm are possible. Both automated bundle and single bar

loading to a maximum length of 8.5m produce a finished part of up to 6m maximum.

Premier Lasertube is an established steel stockholding, processing and laser cutting service provider supported by its long-established parent company Brown and Tawse.

Having recently invested in new facilities and machinery, Premier Lasertube now offers the services of three tube laser machines along with sawing, drilling and tapping capability.

All of its services are provided in-house from its dedicated 60,000ft<sup>2</sup> warehouse facility located in Leeds, West Yorkshire, adjacent to motorway networks and ideally suited for nationwide distribution. Its clients also benefit from a large range of steel products, complemented by immediate access to group stock and cutting facilities.

It is also committed and able to offer advantageous lead times, through the development of key partnerships with both suppliers and customers.

TTM Laser is an Italian company specialising in the design and production of laser machines and plants for the cutting and welding of tubes and metal sheets.

**Premier Lasertube – UK**  
Email: [sales@premierlasertube.co.uk](mailto:sales@premierlasertube.co.uk)  
Website: [www.premierlasertubeuk.co.uk](http://www.premierlasertubeuk.co.uk)

**TTM Laser – Italy**  
Website: [www.ttmlaser.com](http://www.ttmlaser.com)



## Made in Steel 2017 dates confirmed

THE dates have been set for the seventh edition of Made in Steel. The biannual meeting point for the global steel industry will be held from 17 to 19 May 2017 at the Fiera Milano Exhibition Centre, Milan, Italy, which will host the conference and exhibition dedicated to the entire international steel chain.

"Made in Steel is a well-known and consolidated industrial-political and marketing instrument for the steel industry," stated Emanuele Morandi, CEO of the event's organiser, Siderweb. "The title of the 2017 edition of the event is 'Stronger Together' – a reference to the

importance of working synergistically and revising the system for the future of all enterprises operating in the steel industry."

With 40,886 million tons produced in the first three months of 2016, the European steel industry holds second place as world producer, behind the Asian continent, which in the first quarter produced 68.3 per cent of the world total.

Within Europe, Italy is the second most productive country behind Germany, with 5,768 million tons produced in the period January-March

2016 (source World Steel Association). For the 2017 edition of Made in Steel, alongside the showcase of the main international players in production, manufacturing, trade and end users of steel, the event will present an opportunity for analysis of the economic situation, touching on topics of major interest, and will give insight into the future prospects of the European steel industry.

**Made in Steel Srl – Italy**  
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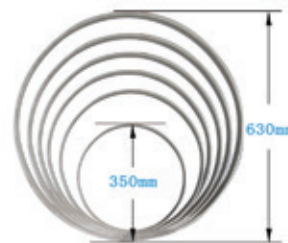
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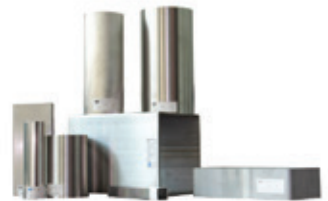
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## Formtek becomes North American distributor for Bossi and Milltech

FORMTEK, Inc, a US-based designer and builder of metal forming tooling, equipment, roll forming and tube and

pipe systems, has signed an agreement to become the exclusive North American distributor for Bossi Srl of Italy.



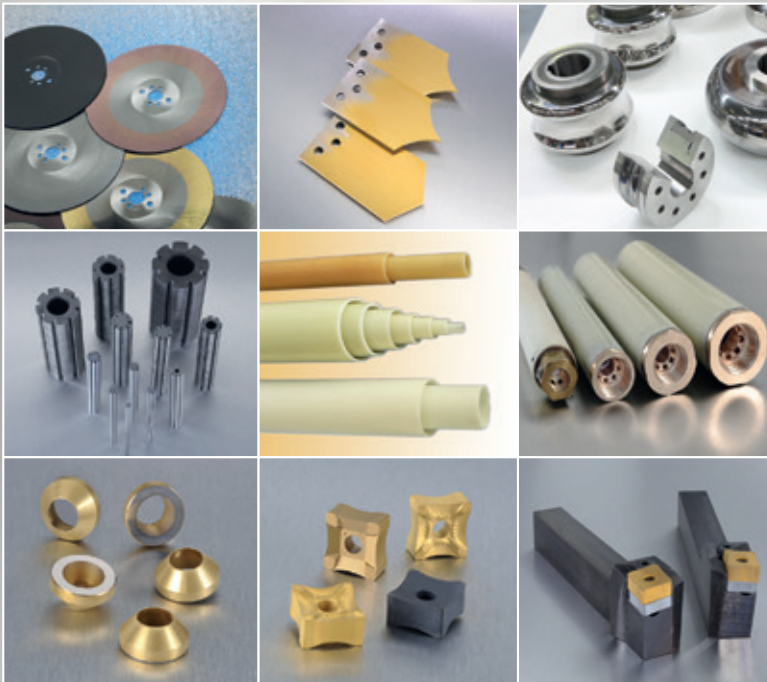
Bossi president Massimo Maestri (left) and Formtek sr vice president Jack Pennuto Jr

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- Capacitors for H.F. welders
- Tube's cleaners

Bossi manufactures inline and secondary surface processing equipment for roll forming and tube mill systems. Formtek has integrated and supplied Bossi equipment on Yoder tube mills for customers in North America.

"The equipment Bossi supplies is high quality, reliable and they have been a good company to work with," stated Formtek sr vice president Jack Pennuto Jr. "Additionally, our customers have provided positive feedback using the machinery, so expanding our relationship to be their North American distributor seemed like a natural fit."

For both new installations and existing tube mills, Bossi's bead grinding, strip polishing and OD processing equipment have opportunities for roll forming, precision tube and stainless steel tube producers in the USA, Canada and Mexico.

Formtek is also now the exclusive North American distributor for Milltech, South Korea, a provider of turnkey solutions for complete ERW pipe plants up to 26". Milltech has been the worldwide licensee of Yoder cage forming technology for nearly 15 years.

"Milltech has supplied numerous installations in North America and across the world; while leveraging our proven cage mill technology they continue to develop and improve the ERW pipe manufacturing process," said Mr Pennuto. "It was a no-brainer to offer reciprocal support for Milltech equipment here in North America, where we can service and support their customers locally."

Milltech has recently developed new pipe threading equipment for API products, as well as a milling cut-off for pipe and hollow structural sections.

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## Zumbach profile measuring systems installed

NEW profile measuring systems from Zumbach Electronic, Switzerland, have been successfully commissioned at ShanDong ShiHeng Special Steel Group Co, Ltd, China.

In November 2015, a further measuring system of the Profilemaster® SPS series was successfully commissioned at ShanDong ShiHeng Special Steel Group.

The measuring unit is equipped with four CMOS camera/laser modules and measures typically L and Omega-type profiles. The system is an important step to guarantee a high quality standard for manufactured profiles. According to the customer testimonial, the Profilemaster system means a major relief for the line operator and helps to solve major measuring problems in the production line.

As a pioneer of on-line measurement, Zumbach Electronic manufactures a comprehensive range of non-contact, on-line measuring and control instruments.

Its technology is in use worldwide for such dimensional parameters as diameter, thickness, eccentricity and out-of-round, and for physical or electrical parameters like expansion, capacitance, dielectric strength, etc.

Profilemaster systems are available in multiple designs, depending on the requirements of the customer and product. The systems are best suited for the continuous measurement monitoring of dimensions or even the complete cross-section of profiles made of metal, plastics or rubber.

ShanDong ShiHeng Special Steel Group said: "To increase the product quality, we installed the Profilemaster SPS 400-S4 from Zumbach in November 2015. It has been a big enhancement for our production. The Profilemaster measures precisely and it can measure



any part and any dimension of the product according to our requirement. After using it, the operator can adjust the rolling machine online and bring the dimension into the quality limit by only one bar. It saves a lot of manpower and material and increases much efficiency for us."

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## OMS completes fit-up

INSPECTION and measurement technology specialist Optical Metrology Services (OMS) has completed the measurement phase of pipeline fit-up work for the Ichthys LNG project, located 220km offshore Western Australia.

The project is the largest discovery of hydrocarbons in the region for 40 years and is being undertaken by global energy company INPEX. With production due to start in Q3 2017, Ichthys involves some of the largest offshore facilities currently operational in the industry.

Commissioned by Pipeline Technique Ltd (PTL) and Heerema Marine Contractors (HMC), the project has seen more than 7,000 pipes measured during various mobilisations. With strict HiLo tolerances of less than 1mm, OMS's precision measurement solutions and compatibility with SmartFit™ software was integral to success.

Paul Eagle, head of client solutions at OMS, said, "The Ichthys LNG project is the largest of its kind OMS has worked on to date and demonstrates the value of pipe measurement and fit-up for oil and gas projects.

"Process improvement across the industry is crucial and pipe fit-up is a key area demonstrating this. No two pipes will ever fit together with zero misalignment, so minimising HiLo through precision measurement and analysis helps to increase project success."

**Optical Metrology Services Ltd** – UK  
Email: [info@omsmeasure.com](mailto:info@omsmeasure.com)  
Website: [www.omsmeasure.com](http://www.omsmeasure.com)



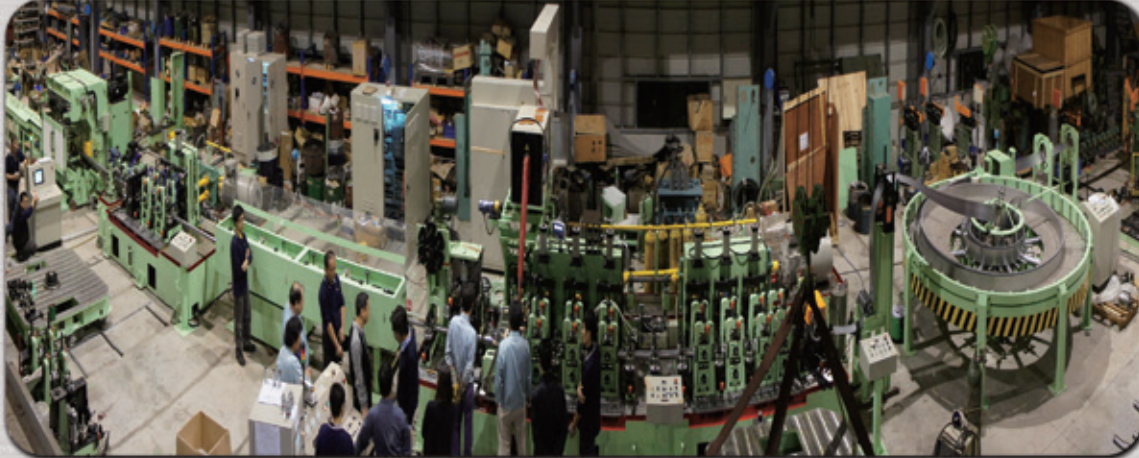
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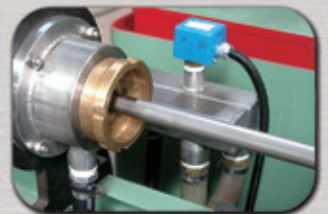
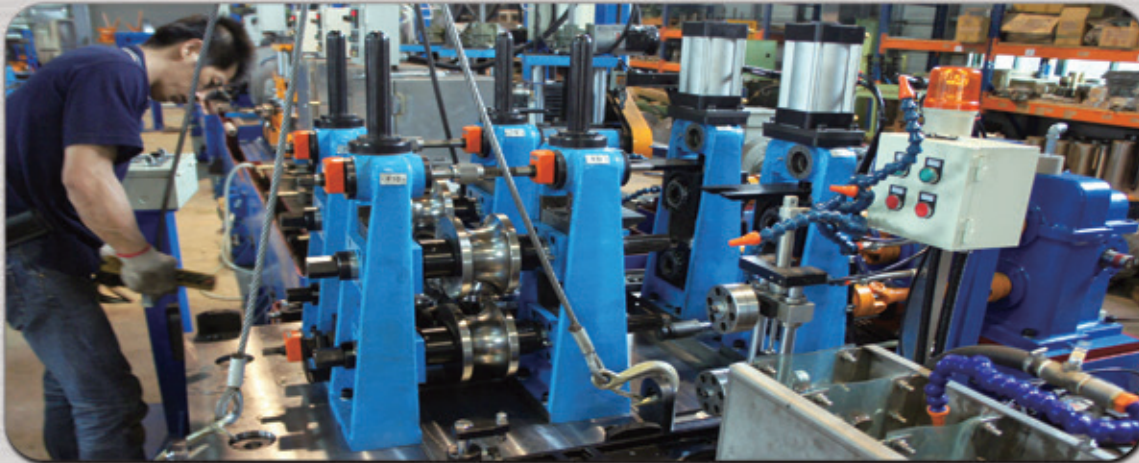
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## ● GP LM-70HF for 300 / 400 Series SUS ERW Tube Forming Mill



## ● GP LM-50 BA Stainless Steel Tube Forming Mill with Bright Annealing and Quick Change



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- ◆ Plasma / Tri-cathode Welding Equipment
- ◆ Slitting Machine



## Largest FABTECH stand space to date for Irish materials handling manufacturer

COMBILIFT's FABTECH presence will be hard to overlook this year. With three stands the Irish manufacturer will be displaying at least five model ranges from its wide portfolio of specialist and customised materials handling solutions. Whether you handle long and awkward loads, pallets, containers, extremely oversized loads or a combination of these, there is a Combilift to fit the bill.

Exhibits include the smallest Combilift to date: the 1.5t Combi-WR pedestrian reach stacker, which is the only truck of its kind able to work in aisle widths of just 2.1m.

The Combi-GT stand-on model enables stockholders to dramatically increase storage space in any given area due to its very narrow aisle capability, and this will also be on show.

The Combi-CB is a compact counterbalance design truck with the added benefits of multidirectional travel, and can handle both palletised and long loads.

A model from the original and still very popular C Series, which come with load capacities from 2.5 to 25 tons, will be represented.

As with all Combilifts,

the C Series is valued for its indoor/outdoor capability, its robust design and dependable long-life operation.

Combilift will also exhibit an Aisle-Master VNA articulated truck, which can replace a combination of other types of forklifts for more efficient offloading, handling and storage of mainly palletised goods.

Managing director and CEO Martin McVicar commented: "Having our largest stand space to date allows us to do justice to our ever-growing range.

"We look forward to welcoming visitors to see the mix of products, live demos and the Combi-CB dance, which is back by popular demand."

**Combilift Ltd** –  
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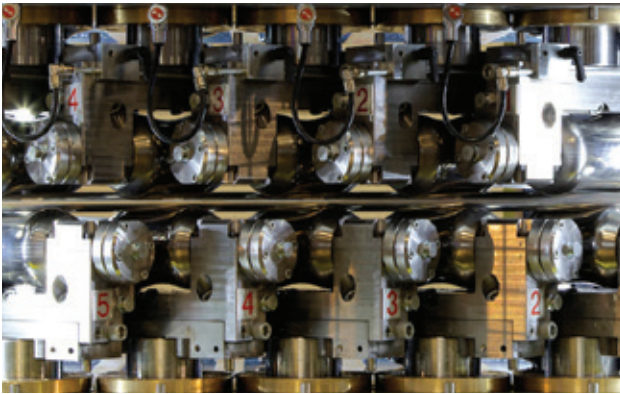
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## Hypertherm reveals revamped website to support new company vision

HYPERTHERM, a manufacturer of plasma, laser and waterjet cutting systems, is unveiling a new tagline in support of its company vision and a new website designed to support the industrial cutting and robotic needs of individuals and companies around the world.

Hypertherm's new "Shaping possibility" tagline replaces the "Cut with confidence" tagline in use since the beginning of this decade. The new tagline conveys the company's role in providing products, services and expertise to help customers achieve their vision.

"Through our products and the service and support of more than 1,400 Hypertherm associate-owners and thousands of authorised partners we help our customers cut parts and achieve their business objectives,"

explained Evan Smith, Hypertherm's president and CEO.

Hypertherm is also introducing a completely new website. Site visitors can compare different cutting technologies and platforms, troubleshoot cutting challenges, and connect with Hypertherm experts around the world. The site includes major navigational changes and powerful search features that make it easy to find content, while responsive design aids viewing on computers, tablets and smartphones.

"For both new and long-time fabricators, the new Hypertherm.com provides useful content to help people make informed decisions and get the most out of their Hypertherm products," said Denise Champagne, leader of Hypertherm's corporate communications and brand management team. "We are

enabling people to tap into nearly 50 years of cutting expertise to get the information and support they need to complete new projects. We are also providing more information than ever before on topics we see as critical to our success, like environmental sustainability and lean manufacturing, in the hopes that other companies can learn from our work."

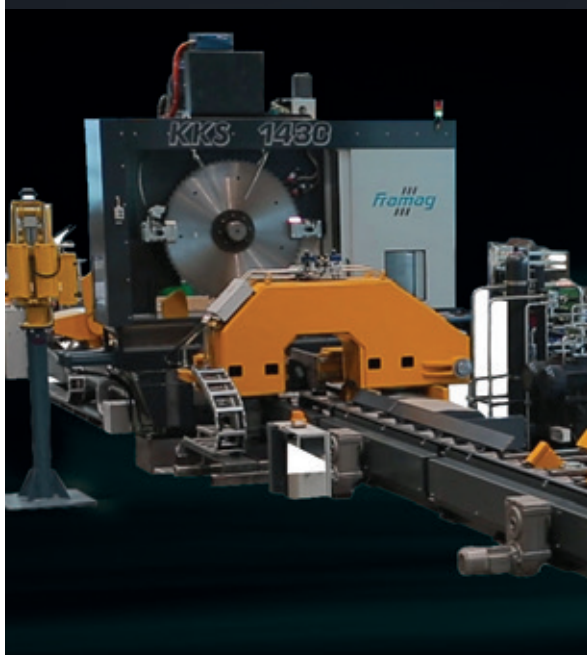
Hypertherm designs and manufactures advanced cutting products for use in a variety of industries such as shipbuilding, manufacturing and automotive repair. Its product line includes plasma, laser and waterjet cutting systems, in addition to CNC motion and height controls, CAM nesting software, robotic software and consumables.

**Hypertherm – USA**  
Website: [www.hypertherm.com](http://www.hypertherm.com)

### framag Industrieanlagenbau GmbH

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## Valve World Expo 2016 in Germany

VALVE World Expo, the global exhibition for industrial valves, is to be held in Düsseldorf, Germany, for the fourth time, from 29 November to 1 December 2016.

The entire spectrum of industrial valves will be covered by the event in three exhibition halls. The ranges encompass valves, valve components and parts, actuator drives and position controllers, compressors, engineering services and software, associations and publishers.

Visitors are expected from the fields of oil, gas and petrochemical industries, chemical industry, food industry, marine and offshore industries, water and waste water management, automotive and mechanical engineering, pharmaceutical industry and power plants.

By mid-2016, more than 19,600m<sup>2</sup> of net exhibition space had been booked, with 638 exhibitors from 39 countries having registered.

Most European companies come from Italy, the UK, Germany, Spain, France, Turkey and the Netherlands, while overseas visitors will mainly come from the USA, India, Taiwan, South Korea and China. The accompanying Valve World Conference will again be organised by KCI.

Alongside topics of the future such as material selection, new technologies and processes for the production and application of valves, new energies and the analysis of new services, an in-depth debate about the structure of the industry will take place.

Lectures, workshops and seminars will deepen the content covered by the conference. Experts from all over the world are expected to exchange with conference delegates on innovations from the dynamically growing area of valve technology, including its upstream and downstream technologies.

The Pump Summit, the International Exhibition & Conference for Pump Technology, will take place on the ground floor of Hall 7 on 29 and 30 November, allowing producers, distributors and users of pumps, seals and compressors to present their products and exchange knowledge.

The agenda of the Pump Summit's accompanying conference features talks and selected workshops on pump and seal applications in a wide variety of industries.

Valve World Expo will also be the ideal market platform for information, innovations and investments.



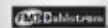
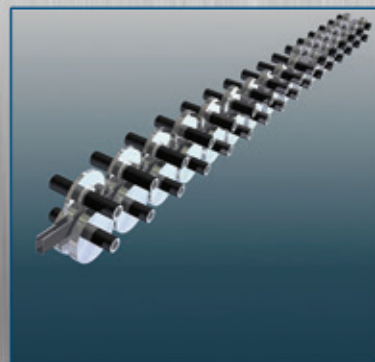
At the event visitors can find the entire global offering of the industrial valves and fittings industry making the show a must for those involved in these industrial sectors around the world.

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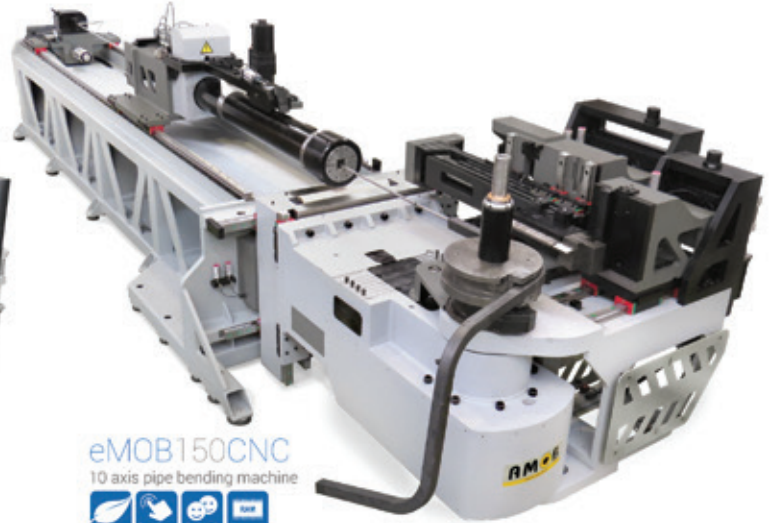


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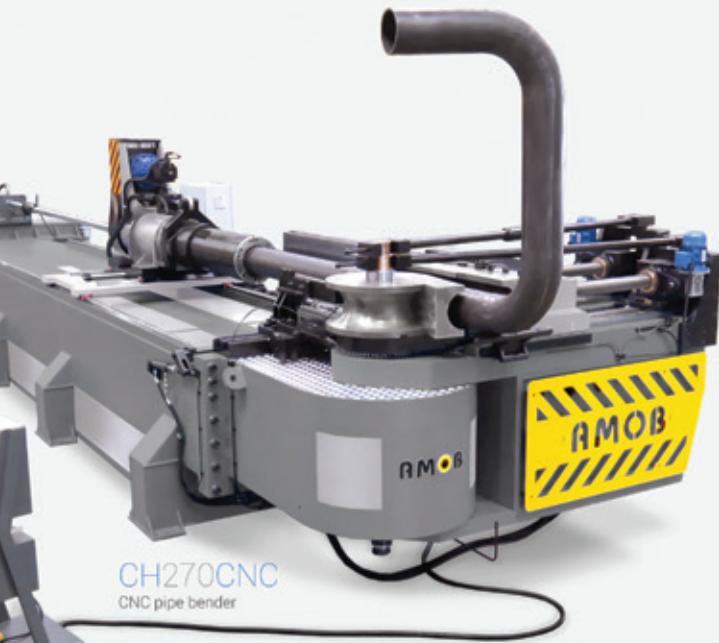


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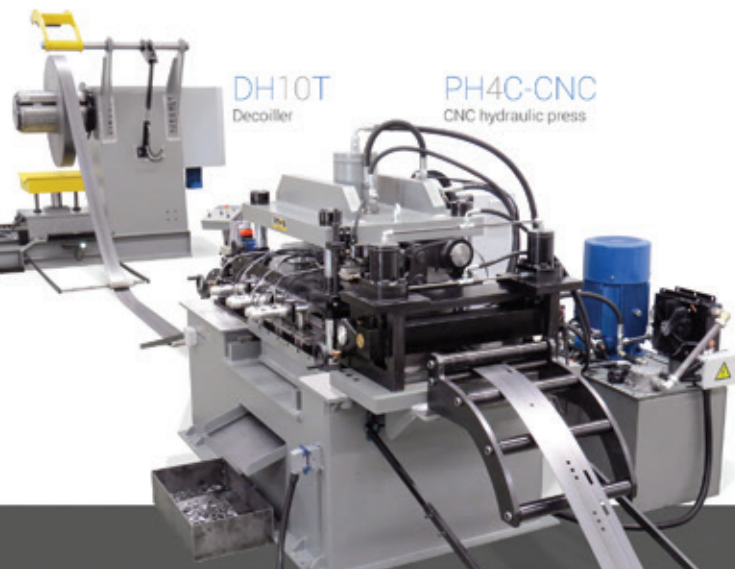


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## Conference registration opens

REGISTRATION for Offshore Energy Exhibition & Conference 2016 (OEEC 2016) is now open. The ninth edition of the event is expected to attract 11,500 offshore professionals and more than 650 exhibiting companies.

The event takes place on 25 and 26 October 2016 at Amsterdam RAI in the Netherlands. Offshore Energy is an annual event focused on the complete

offshore energy industry. It covers both the exploration and production of the conventional energy resources oil and gas, as well as the expanding renewable part of the energy mix such as offshore wind and marine renewable energy. Renewables play an important role during OEEC 2016.

Next to the exhibition, which covers four halls at Amsterdam RAI totalling an

area of approximately 26,000m<sup>2</sup>, more than 80 speakers representing some of the major players in the offshore energy industry will feature at the conference.

The extensive three-day conference programme consists of keynotes, technical sessions and master classes.

**Navingo BV** – Netherlands  
Website: [www.offshore-energy.biz](http://www.offshore-energy.biz)

## Tube China 2016: international event showcasing cutting-edge tube technologies

THIS year wire China and Tube China once again return to the New International Expo Centre in Shanghai from 26 to 29 September 2016.

The organisers – Shanghai Electric Cable Research Institute, Messe Düsseldorf (Shanghai) Co and Metallurgical Council of the China Council for the Promotion of International Trade – once again come together to bring the industry the number one trade fair of its kind in Asia.

In 2016, the organisers have a special focus on the fastener industry's well-known media "China Fastener Biz", launching the Fastener Special Zone. They are committed to opening up the upstream and downstream channels, and to create a one-stop sourcing platform for fastener products, manufacturing equipment and raw materials.

This edition of the exhibition has created a new record with nine exhibition halls covering 97,000m<sup>2</sup>. There will be more than 1,650 brands showcasing their latest products and technology, attracting more than 40,000 professional visitors from 80 countries and regions.

wire China 2016 booths have already been sold out, while 80 per cent of the booths at Tube China and the Fastener Special Zone have been sold. Tube companies that will be exhibiting at the show include SMS, EFD, Inductotherm Group, Bohleirt, LAP, TPCO, KTM, Bieherit, Youfa Steel Pipe Group, Panyu Chu Kong Steel Pipe, Jiuli, Stellar Group, Jueneng Special Steel, Hubei Xinyegang Steel, BaoSteel, Ampco

Metal, Formdrill, Uniwel Machinery, Sicolinx, Chiao Sheng and Maxtech.

With the introduction of China's 13<sup>th</sup> "Five-year policy", the state will focus on promoting infrastructure, industrial layout, environmental protection and the energy-saving building industry, which promote the demand for wire, cable and tube across the country. Huge market potential is attracting international companies to take their share of these markets.

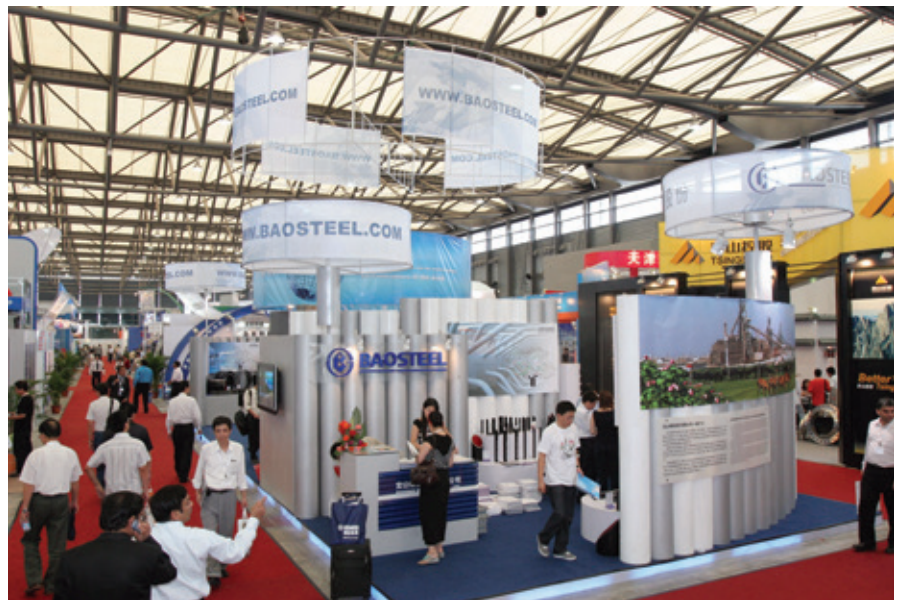
This year exhibitors from Germany, North America, Italy, Austria, the UK, Japan, Korea and Taiwan will attend the exhibition. The one-stop business platform, showcasing advanced international cutting-edge technologies and solutions, will provide benefit to the local industry with new concepts

and ideas, which eventually accelerate industry innovation.

The "2025 – Made in China" and "along the way" development strategy will promote the rapid development of automobile manufacturing, new energy, high-speed rail and urban rail construction, aerospace, petrochemical, construction and other applications in industry, to bring the fastener industry new business opportunities.

Meanwhile, the transformation and upgrading of fastener products will also be calling for more advanced fastening technology, which provides market needs for fastener manufacturing equipment and relevant products.

**Tube China 2016**  
Website: [www.tubechina.net](http://www.tubechina.net)



## McElroy unveils modernised website

PIPE fusion equipment manufacturer McElroy has launched its newly redesigned website. The entire fusion website has been designed to be more inviting, informative and mobile-friendly, and is easy to use, providing machine information as well as fused piping system information to both frequent and first-time users.

With a new menu structure, machines are grouped into two distinct categories based on the type of industries served: underground/construction – for equipment fusing traditional thermoplastics like HDPE, MDPE, PA12 and Fusible PVC®; and mechanical/HVAC/plumbing – for equipment fusing polypropylene pipe including PP-R and PP-RCT.

All product lines include an overview of the features and benefits. Individual product pages include all information and collateral pertinent to the particular machine within the product line, for example part numbers; photos, videos and animations; machine specifications; literature; and accessories and replacement parts.

A search feature has been added that allows visitors to search for products, articles, accessories and more. An optional tutorial to help visitors navigate the site is also offered.

**McElroy – USA**

Fax: +1 918 831 9285

Email: [fusion@mcelroy.com](mailto:fusion@mcelroy.com)

Website: [www.mcelroy.com](http://www.mcelroy.com)

## Induction billet heating

AJAX Tocco Magnethermic has shipped a PowerZone billet heating system to LC Manufacturing, located in Michigan, USA.

The 1,000kW, 1.3 to 3.3kHz system is designed to heat 1.06" to 2.875" diameter x 6" to 20" long carbon steel billets to forging temperatures. The system includes automatic changing of frequency for differing billet sizes. A PLC with touchscreen display featuring ForgeView Plus software is also included. The unit is loaded by a vibratory bowl feeder.

LC Manufacturing chose the Ajax Tocco system based on several factors, including prior experience with Ajax Tocco equipment. The total package fitted the company's requirements and the PowerZone provides versatility, multi-frequency and the ability to run a wide variety of parts.

Ajax Tocco Magnethermic designs and manufactures induction heating and melting equipment for various industries and applications. It also provides a range of services including laboratory process development, preventive maintenance, equipment repair and parts, coil repair facilities, and installation services through its locations in North and South America, Europe and Asia.

**Ajax Tocco Magnethermic Corp – USA**

Email: [sales@ajaxtocco.com](mailto:sales@ajaxtocco.com)

Website: [www.ajaxtocco.com](http://www.ajaxtocco.com)

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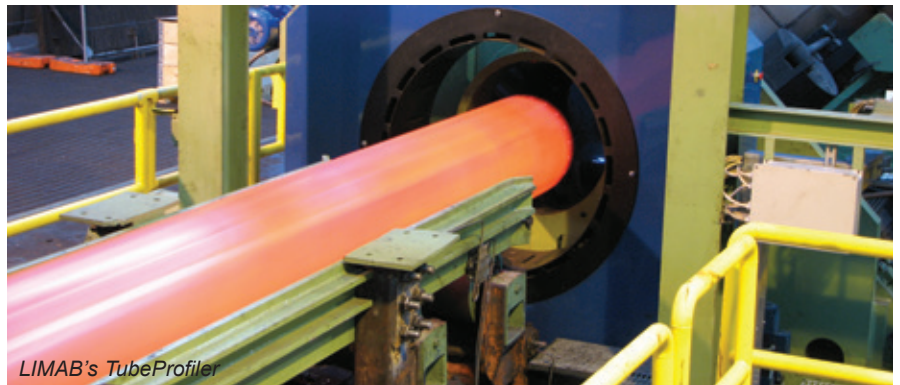
## LIMAB launches new website

LIMAB AB, a developer and manufacturer of in-line, laser-based measurement sensors and systems, has launched a new homepage.

The website has a new structure to make it easy to explore the company's product offerings and to help customers find the best measurement solution for their different applications.

The site includes information about measurement solutions for various industrial applications, using illustrative process descriptions, as well as more detailed information about products, including specifications, pictures and videos.

Other features include the ability to send service requests; downloadable brochures and application notes in



LIMAB's TubeProfiler

several different languages; and the latest news concerning the company's activities.

LIMAB has also included links to social media such as Facebook and

YouTube, where further information can be collected.

**LIMAB AB** – Sweden  
Website: [www.limab.com](http://www.limab.com)

## RMTS hires new vice-president

ROLL Machining Technologies and Solutions has hired Michael Strand. Mr Strand is new to RMTS but is well known and respected in the tube industry.

He brings 28 years of technical sales experience at Addison Machine and is a detail orientated, highly dependable and driven individual with experience in multiple areas of the manufacturing and tube and pipe industries, including sales, purchasing and machining. Mr Strand started in the tube industry directly from

college as a roll manufacturer, before moving into the office to help customers manage their roll tooling needs. RMTS said the company looks forward to joining forces with Mr Strand and to serving its customers to an even higher standard.

**Roll Machining Technologies and Solutions** – USA

Email:

[michael.strand@rollsolutions.com](mailto:michael.strand@rollsolutions.com)

Website: [www.rollsolutions.com](http://www.rollsolutions.com)



Michael Strand of RMTS

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## Final acceptance issued for modernised bar mill

HES Hennigsdorfer Elektrostahlwerke GmbH, a company in the Riva Group, has issued Primetals Technologies with the final acceptance certificate for a modernised turnkey bar mill in Hennigsdorf, in the German state of Brandenburg.

The modernisation project included replacing two existing stands in the roughing mill with new Red Ring stands, which do not have housing. This solution requires less space and has greater rigidity, to enable consistently narrow product tolerances to be achieved. The new stands also have larger rolls. This increases the stability of the process and allows multi-strand operation.

Primetals Technologies received the order in May 2015, and commissioning

took place during a scheduled plant shutdown at the turn of the year 2015/16, with industrial rolling restored in January.

HES is one of three production locations that the Italian Riva Group has in Germany. The plant converts raw scrap metal provided by Riva Stahl GmbH into steel products, which are then marketed by Riva Stahl GmbH. The range of products includes continuously cast billets, reinforcement steel and bright steel, which is mainly supplied to the automotive industry and its suppliers.

For the modernisation of the bar mill, Primetals Technologies supplied two new type RR564 housing-less Red Ring roughing stands with a horizontal

configuration. The scope of supply also included couplings, drive spindles and spindle supports. The centreline of the rolls can be varied between 480 and 730mm, and the roll barrels are 850mm long. A new gearbox was also installed on one stand.

Stand change parts, a motorised device for roll change operation, and the on-board electrical equipment for the stands completed the scope of supply. Primetals Technologies was also responsible for construction and commissioning.

The bar mill processes billets of carbon steel and low alloy grades with a square cross-sectional area of 140 x 140mm, a length of 12m, and a weight of 1.8 metric tons. The final products are rebars with diameters of between 10 and 50mm, and rounds with diameters ranging from 14 to 50mm. The plant can also be run in two-slit mode if the finished products have a diameter of 28mm or less.

Primetals Technologies, headquartered in the UK, offers a complete technology, product and service portfolio that includes integrated electrics, automation and environmental solutions. This covers every step of the iron and steel production chain, extending from the raw materials to the finished product, in addition to the latest rolling solutions for the non-ferrous metals sector.

**Primetals Technologies Ltd – UK**  
Website: [www.primetals.com](http://www.primetals.com)



Two Red Ring rolling stands from Primetals Technologies were installed on the roughing train of the HES bar mill

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## Circular saw solution for tough everyday industrial application

WITH its heavy-duty PSU 450 series, Behringer Eisele presents a modular-design high-performance circular saw that adapts to the sawing job.

The PSU is available in a semi-automatic version, the PSU450-H, and as the fully automatic PSU 450 VE or PSU450 CNC2. For saw blade diameters up to 470mm and a wide cutting range of up to 160mm for round material and 240 x 85 for slabs, the machine provides the solution to a wide range of different sawing requirements. The clamping units, with fast adjustment and quick-change facility, are beneficial particularly where different sawing conditions have to be taken into account.

Also on offer for both the PSU models is a version for sawing aluminium. A high-powered drive system of 6.5/8kW and a speed of 1,250/2,500 rpm respectively ensure powerful and fast material machining. The PSU 450 can also be connected to an extraction system – a necessary option when working with aluminium.

Due to its universal applicability, the wide speed range of 6-48 or 12-96 rpm makes the PSU series suited to working with pipes and square hollow profiles. In addition, in the semi-automatic PSU 450-H the cutting range for square material can be further extended using the adjustable transverse material stop to as much as 400 x 30mm (when making 90° cuts).

For curved pipes or hydroforming products, Behringer Eisele offers the PSU 450 GS. With the aid of a fixture, this model is capable of trimming curved pipes. The two-hand control system provided as standard eliminates the

need for the protective hood that can be an inconvenience for this type of sawing assignment.

Both in the semi- and the fully automatic version, the basic machine comprises a hard-wearing machine frame in which the basic and swivel plate with the saw are embedded as the central unit. The sawing unit comprises a high-powered motor and a hydraulic feed cylinder, as well as a worm-parallel helical gear pair with rotation compensation.

The swivel range from left to right is wide, particularly in the semi-automatic version, at 30°-45°-90° and 45°-30°-0°.

The fully automatic PSU 450 CNC2 is equipped with a convenient CNC control system. In addition, a material feed axis, a swivel axis for mitre cuts and a waste disposal unit for optimum process reliability are integrated into the basic machine.

The new interactive graphic IPC control system permits programming not only in the workshop but also in the form of online data transmission from a PC office workstation. The various jobs and their respective terms of reference are simply and conveniently programmed on screen. The large swivel range permits acute angles of as low as ±30° to be cut. The program-controlled discharge gripper of the PSU opens up scope for the free selection of cuts, with the gripper travelling automatically out of the potential collision area of the saw.

Material feed is performed by a CNC-controlled feed gripper mounted on a durable backlash-free pre-tensioned linear guide. Material tensioning takes place vertically by means of a tensioning cylinder that adjusts automatically to



*With the aid of a fixture, the PSU 450 GS is capable of trimming curved pipes*

the profile size, and horizontally by the tensioning device of the feed and discharge gripper. All tensioning pressure levels can be individually adjusted.

Protective machine enclosures are designed for simple handling and to offer the operator a comprehensive view of the functional areas of the saw during operation. The modular-structure sawing system, featuring different types of magazine and sorting systems, permits individual customer needs to be addressed.

**Behringer Eisele GmbH** – Germany  
Email: [info@eisele.behringer.net](mailto:info@eisele.behringer.net)  
Website: [www.behringer.net](http://www.behringer.net)

## Modular tube ID scarfing systems

MANY modern tube mills need flexible production for meeting the precise tube requirements of their customers.

Alpha Metall provides them with a modular mechanical tube ID scarfing system that offers competitive technical solutions for common tube ID 10-100mm. For tube ID 26-620mm the hydraulic tube ID scarfing technology that the company offers is state-of-the-art.

Both technologies have been approved in the market for more than 30 years. The operation of mechanical tube ID scarfing systems is intuitive for the staff and investment costs are competitive.

The basic mechanical spare parts are available from Alpha Metall stock as and when required. Alpha Metall commissioning includes staff training

and fine adjustment for perfect tube ID results. Enquiries on non-standard customised tube ID scarfing systems are also welcome.

**Alpha Metall GmbH & Co KG** – Germany  
Fax: +49 6831 506958  
Email: [info@alpha-metall.de](mailto:info@alpha-metall.de)  
Website: [www.alphametall.de](http://www.alphametall.de)

## Easy and safe connection of measuring and display devices

IN addition to flow, pressure is the most relevant parameter and measuring factor in hydraulics. Measuring system pressure is therefore the most important and most frequently used method for monitoring, controlling and preventive service and maintenance of hydraulically operated machines and systems, and is a prerequisite for their economical operation.

Test couplings from the Stauff Test range are planned during the design phase of a machine and installed in suitable positions in the hydraulic system at the factory. They allow machine operators and maintenance personnel to easily and safely connect analogue and digital measuring and display devices for the temporary or continuous testing of system pressure and other factors.

If required, they also allow venting of the system as well as collecting representative fluid samples, eg for analysing the degree of contamination of the fluid. This type of connection requires no tools and can also be carried out during operation under full system pressure up to 630 bar (depending on the type of coupling).

The check valve (ball or poppet valve) integrated into the test coupling opens only after connection of the hydraulic tester with suitable adapters or hoses. This ensures safe sealing of the connection without leakage or danger of fluids escaping from the system.



Cross section of a male stud test coupling SMK with integrated ball valve from the Stauff Test 20

Stauff test couplings are not crimped after insertion of the internal valve components and seals, but are closed with a threaded nipple in a fully automated process. Not only does this design contribute to precision and process reliability in production, it also secures the proper functioning of the couplings. The vibration protection, which prevents a self-acting detachment of the protective metal cap through vibrations in the system, is another advantage.

For the finishing of the test coupling range in carbon steel, Stauff relies on the zinc/nickel surface coating, which provides more than 720 hours of resistance against red rust/base metal corrosion in the salt spray chamber in line with DIN EN ISO 9227. The chromium(VI)-free coating exceeds



The entire range of measuring equipment from Stauff, including test couplings and adaptors

the highest requirements with regard to resistance and durability and also complies with the valid ELV, REACH and RoHS guidelines.

Versions in stainless steel V2A and V4A are generally available from stock. Alternative materials and surfaces are available on request.

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## Quick-change technology for mills and roll forming

RAFTER Equipment Corporation has introduced a new patented Mill-Flip® quick-change technology for tube mill and roll forming machines that promises part-to-part changeovers in 15 minutes or less.

The new system requires no special mill stands or roll tooling, no complicated mill drive connections or electrical controls systems, no special operator or maintenance training, and

no overhead cranes or special raft handling equipment. It features the ability to quickly break into a production run and quickly go back to the previous product, as well as built-in redundancy for increased line up-time, and no infringement on the operator's side of the mill during changeovers.

The company also manufactures tube mills, pipe mills, roll forming machines, flying cut-offs and other related mill

machinery. Its business includes the retrofit and replacement of common tube mill components, including driven roll stands, idle side roll stands, weld squeeze boxes, weld upset bead removal equipment (OD bead trimmers) and turkshead type straighteners.

**Rafter Equipment Corp – USA**

Email: [sales@rafterequipment.com](mailto:sales@rafterequipment.com)

Website: [www.rafterequipment.com](http://www.rafterequipment.com)

## Machining centre halves company's lead times

A NEW Mecal MC 309 Nike CNC machining centre from Addison Saws is enabling Stayfix Architectural Aluminium Systems to halve production lead times.

With business growing significantly, Stayfix had begun outsourcing the machining of components for several of its window and curtain walling systems.

"This approach was fine as an interim measure," commented company director Kiran Bhudia. "However, with growing sales and an ongoing drive to provide even higher levels of quality and

service, we took the decision to invest in a manufacturing solution that would enable us to bring all our machining back in-house.

"Addison's were particularly helpful and informative throughout the entire buying process. By providing a full demonstration of the machining centre's capabilities, including extensive cutting trials, they ensured we understood fully how investing in the Mecal would benefit our business and satisfy our ongoing production requirements. With the machine now in place, we have been able to reduce our lead times by 50 per cent."

With an intuitive operator interface, the Mecal MC 309 Nike has streamlined Stayfix's manufacturing processes. Able to machine components of up to 6,540mm in length, it can easily accommodate even the larger extrusions used by the aluminium systems business. The Nike's 3+1-axis configuration allows full use of the automatic tool change capability when working at any angle to 180°, enabling drilling, milling and tapping processes to be carried out in one operation, and accelerating the production of drainage slots and apertures for locks and handles.

In addition to the Mecal MC 309 Nike machining centre, Stayfix purchased a Mecal SW 453 Plug double mitre saw (selected for its ability to provide a fully automatic sawing solution for extrusion, prior to CNC machining), and two Tronzadoras semi-automatic upstroke aluminium sawing machines from Addison Saws.

The Mecal MC 309 Nike machining centre is equipped to automatically machine, drill, mill, slot and prep both aluminium and steel extrusion bars. It is also suited to new product development, while its high levels of accuracy and repeatability ensure minimal waste.

The MU-DPM version has an automatic magazine and clamps positioned by head. Features include pneumatic profile rotation  $\pm 90^\circ$  to work three sides; mechanical stops for intermediate angles; the main spindle does all work with full use of the automatic magazine; full CAM-3D software; integration with external software; 3,490mm working length; open ends to allow machining of longer pieces; zero stops at each end to work multiple profiles; and an automatic centralised lubrication system.

Addison Saws offers an extensive range of full CNC machine tools from premier industrial machine manufacturers. The product range includes simple, manually operated machines to highly sophisticated, fully automated sawing lines, and has recently been increased with the addition of heavy duty 3, 3+1, 4 and 5-axis long-bed multi-piece machining centres. The company is part of the Addison Group, which also includes saw blade re-manufacturing firm Dynashape, and tube-bending technology specialist Tubefab.

**Addison Saws Ltd – UK**

Fax: +44 1384 264955

Email: [sales@addisonsaws.co.uk](mailto:sales@addisonsaws.co.uk)

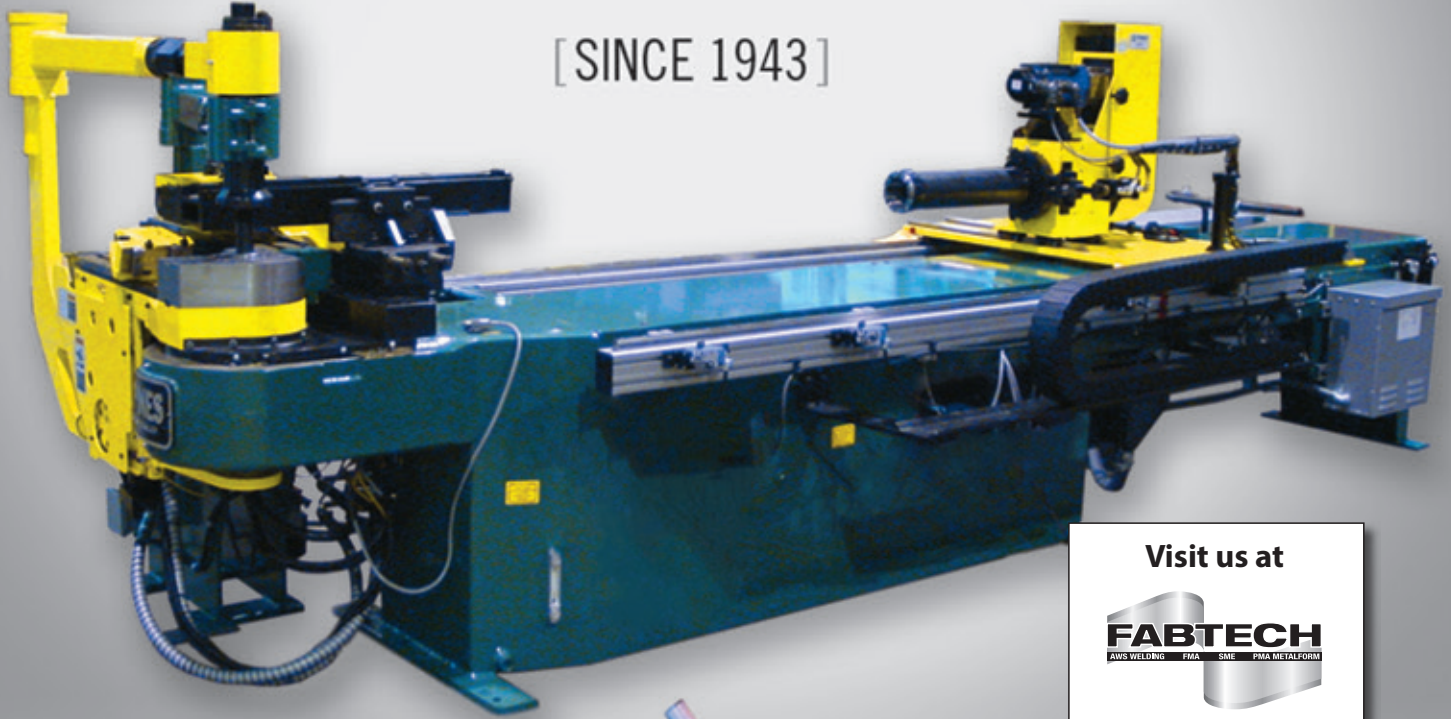
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*The Mecal MC 309 Nike CNC machining centre*



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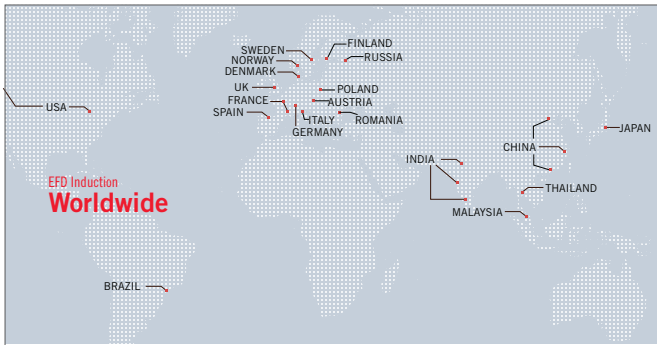
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## Multi-stage automated lapping machine

SUNNEN'S new SVL-2115 automated lapping machine claims to bring increased productivity and part consistency to what is traditionally a manual process.

Based on the same machine platform as the SV-2100 honing system, the SVL-2115 provides single set-up processing of hydraulic valves, sleeves, fuel system components and other parts that are prone to



Sunnen's SVL-2115

distortion when honed. The walkaway system uses an index table to automatically lap and air gauge bores throughout the cycle. Gauge readings are fed back to the control and the cycle is repeated until the parts are within spec.

"Automated lapping is more consistent than manual and there are fewer workers with the skills necessary for precision manual lapping," said Sunnen product manager Phil Hanna.

"For very expensive parts an automatic lapping process reduces the possibility of ruined parts due to human error. Since lapping is usually the last process during the machining of a workpiece, if the lapping is not correct all the work to get the part produced up to that point is wasted."

The Sunnen lapping system handles workpiece diameters from 6.5 to 20mm (0.26" to 0.7") and lengths up to 12 times the bore diameter, not to exceed 200mm (7.87").

Spindle speed range is 100-2,000rpm during lapping, but slow speeds are possible for non-powered steps such as lapping paste application or slow-rotation bore entry. Stroker speed is 0-350 SPM, with stroke length optimised to achieve a high degree of cylindricity.

"This system is a time-saver and it frees operators to run another machine, or handle other job floor duties," added Mr Hanna. "Operators load the workpiece into the fixture and start the lapping cycle; the cycle ends when the part is in tolerance."

Sunnen has developed laps and gauge probes to accompany the new system, and easy tooling and probe changeovers accommodate frequent changes during the course of a shift.

A stack light allows operators to monitor cycle completions or faults from a distance, while a light curtain is standard. The lapping system is available with Sunnen's new SVF filtration system.

**Sunnen Products Company – USA**

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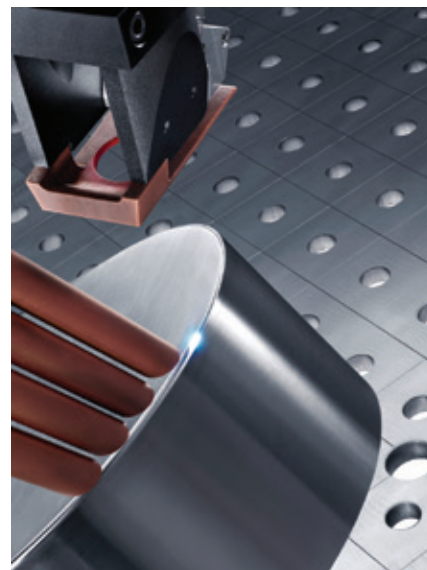


## Making laser welding an easy investment for subcontractors

TO make the decision to adopt laser welding technology easier, Trumpf has introduced the compact TruLaser Robot 5020 Basic Edition with TruDiode laser, which the company claims can reduce the initial outlay by up to 20 per cent and, where a laser network is used,

reductions of up to 50 per cent are possible.

Laser welding offers benefits over other joining methods and enables subcontractors to add value to the service they provide with design consultancy to maximise the qualities of



the process. As a result, subcontractors can establish themselves as partners for product development.

A laser-welded seam is virtually indestructible and requires no secondary finishing. As the process introduces less heat into the workpiece, there is hardly any distortion, eliminating the need for subsequent levelling.

All types of weld can be accomplished with laser, and the different types have distinct advantages. Heat conduction welding, for example, results in seams with excellent surface quality. Deep penetration welding creates a high-strength, narrow and deep seam that has a higher tensile strength than a conventionally welded seam. Both methods also allow higher processing speeds. Another benefit with laser welding is that expensive fixtures are only necessary for complex parts and in exceptional cases. The clamping technology can often be manufactured with simple sheet metal designs and standardised parts.

The entry-level system TruLaser Robot 5020 Basic Edition from Trumpf has a footprint of just 30m<sup>2</sup> and includes everything needed to perform automated deep penetration and heat conduction welding in mild steel, stainless steel and aluminium up to 4mm thick. The rotate and tilt positioner further boosts productivity.

The laser network option allows the TruLaser Robot 5020 Basic Edition to tap in to the beam source of a nearby Trumpf punch laser machine or 2D laser machine, saving the cost of the TruDiode laser.

**Trumpf Ltd – UK**  
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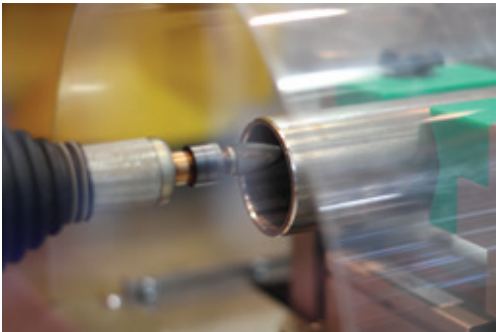
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## Robot chamfering by machining

PROVEA, a French company that specialises in designing and manufacturing machines for the tube industry, has introduced its latest project – robot chamfering by machining. The robotic unit was first shown during the 2016 Düsseldorf Tube fair and greeted with enthusiasm by tube manufacturers.

The RU series from Provea is designed to process external and internal chamfer or deburring (after a cutting process, for instance). The RU series is able to provide homogeneous chamfering despite a lack of roundness and co-axiality of the tube.



High accuracy, repeatability and productivity are the main advantages of the RU series. Quick change is another feature of the system. The robot trajectory is adapted to the product (shape and size) – so there is no need to change tool when the user changes the product shape. The range of possible products is extensive even when using the same machine and the same tool – from 10mm up to 300mm overall.

The RU series is modular and provides multiple integration opportunities: straight tubes or bent tubes, both tube ends chamfered simultaneously or successively, several tubes at the same time, infinite section type – square, rectangular or oval.

During the cycle the operator enters the data on the touch control panel (inside and outside tube diameters and shape, number of rotations, step, depth, mill size and speed).

The rotation speed of the mandrel is pneumatically controlled.

The tube is taken by the pliers

and brought to the removable stop as a reference position. After being detected against the stop, the jaws are closed in order to centre and hold the tube during the process. Once the tube is clamped the position is guaranteed in the working axis.

The stop moves down and the robot starts its cycle. During the process the tube remains still thanks to the pliers.

The mandrel starts a few millimetres away from the tube and smoothly penetrates into the tube during the process. This provides a clean, regular and repeatable chamfer.

Several options can be included such as a blowing system, on-line/off-line integration, feeding/reception table, and multiple tube pliers table to chamfer several tubes simultaneously.

**Provea – France**

Email:

[contact@provea-machine-tube.com](mailto:contact@provea-machine-tube.com)

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## Development of energy saving nanotechnology oils

MILLERS Oils has developed a range of low friction nanotechnology oils specifically designed for industrial applications. Originally developed for motorsport, Millers Oils' Nanodrive nanotechnology product has more recently been used in passenger cars

and in the commercial vehicle sector, reducing the friction between engine components and improving component life, reducing wear and tear and boosting performance.

Millers Oils has now applied its nanotechnology expertise to industrial

applications, specifically industrial gearboxes, compressors and hydraulics. Martyn Mann, technical director at Millers Oils, commented, "There is a long-standing product development path that leads straight from motorsport into industry and we believe that nanotechnology can make a similar leap. I can confirm that it is our intention to launch a Nanodrive-type product into industry and we are currently concluding real-world trials."

Nanotechnology works by using nanoparticles that act like millions of ball bearings, smoothing out the surface roughness of metal parts used in machine components, and in turn reducing the friction that has a detrimental effect on machine life and productivity.

The move is driven by Millers Oils' belief that increased pressure to demonstrate reduced energy consumption, particularly on machines with industrial gearboxes, will drive industrial equipment users to use nanotechnology-based oils as a way of reducing costs.

"We intend to start with industrial gears and compressors, but nanotechnology-based oils can also be used in much wider industrial applications," said Mr Mann. He also stated that the company's own laboratory testing has demonstrated the potential market for nanotechnology oils in industry. "In the laboratory we are getting circa 30-50 per cent improvement in component wear on the test rigs, and we believe that a circa 10 per cent improvement in energy efficiency could be achievable. Millers Oils' Nanodrive product has a long history of success in motorsport, and in 2009 won the World Motorsport Symposium Most Innovative Product Award, beating opposition McLaren and Williams.

"Oil is all too often taken for granted by industry, but our experience of other sectors suggests that it can have a major contribution towards increased energy efficiency and reduced wear and tear," said Mr Mann. "The obvious place to take Nanodrive next is into industry."

**Millers Oils Ltd – UK**

Fax: +44 1484 721263

Email: [enquiries@millersoils.co.uk](mailto:enquiries@millersoils.co.uk)

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## Increasing weld purge monitors' sensor life

IT IS vital during the welding of stainless steel, titanium and nickel alloy to monitor the oxygen level at the weld root to ensure non-oxidised, zero-colour welds are achieved.

The lifetime and accuracy of the oxygen sensor within the weld purge monitor is critical to the continuous achievement of such welds.

Replacement sensors for Huntingdon Fusion Techniques (HFT) PurgEye®

100 weld purge monitor are now delivered in a sealed package, keeping the sensors sealed in an inert environment until they are opened for use, and raising the lifespan of each sensor.

The PurgEye 100 weld purge monitor is an IP65-rated oxygen monitor that reads from atmospheric level down to 100 parts per million (ppm), ensuring high quality welds are achieved repeatedly.

Luke Keane, distributor support for HFT, said, "The PurgEye 100 is designed with a special sensor, which monitors the exact level of oxygen during welding. The monitor has a low sensor warning, so unlike other oxygen analysers, the user knows that their monitor is reading correctly, and exactly when the sensor needs changing. Furthermore, the operators can press the auto-calibration button at any

time during a weld, to ensure correct readings."

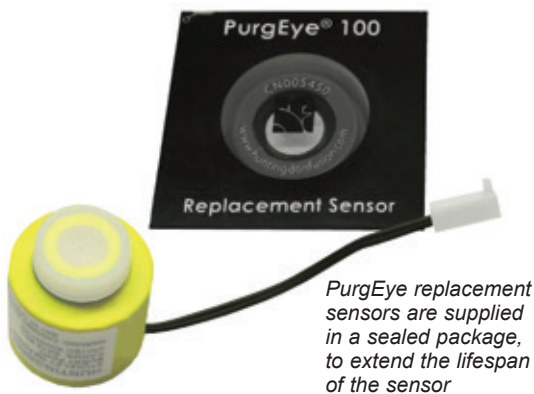
The PurgEye 100 has an easy-to-read LCD screen that includes a low-battery indicator. When the monitor is not in use, an automatic sleep mode activates to conserve battery life.

The updated PurgEye 100 replaces the previous MKV monitor model, which is still in use by many companies internationally.

Unlike the MKV, the PurgEye 100 is designed with leak-tight push buttons, auto-calibration features, vacuum-sealed leak-tight probe assembly, wrist/neck strap, optional rubber housing protector and tripod mount.

HFT offers a weld purge monitor exchange replacement scheme, so that companies can upgrade out-of-date models for the PurgEye 100.

**Huntingdon Fusion Techniques – UK**  
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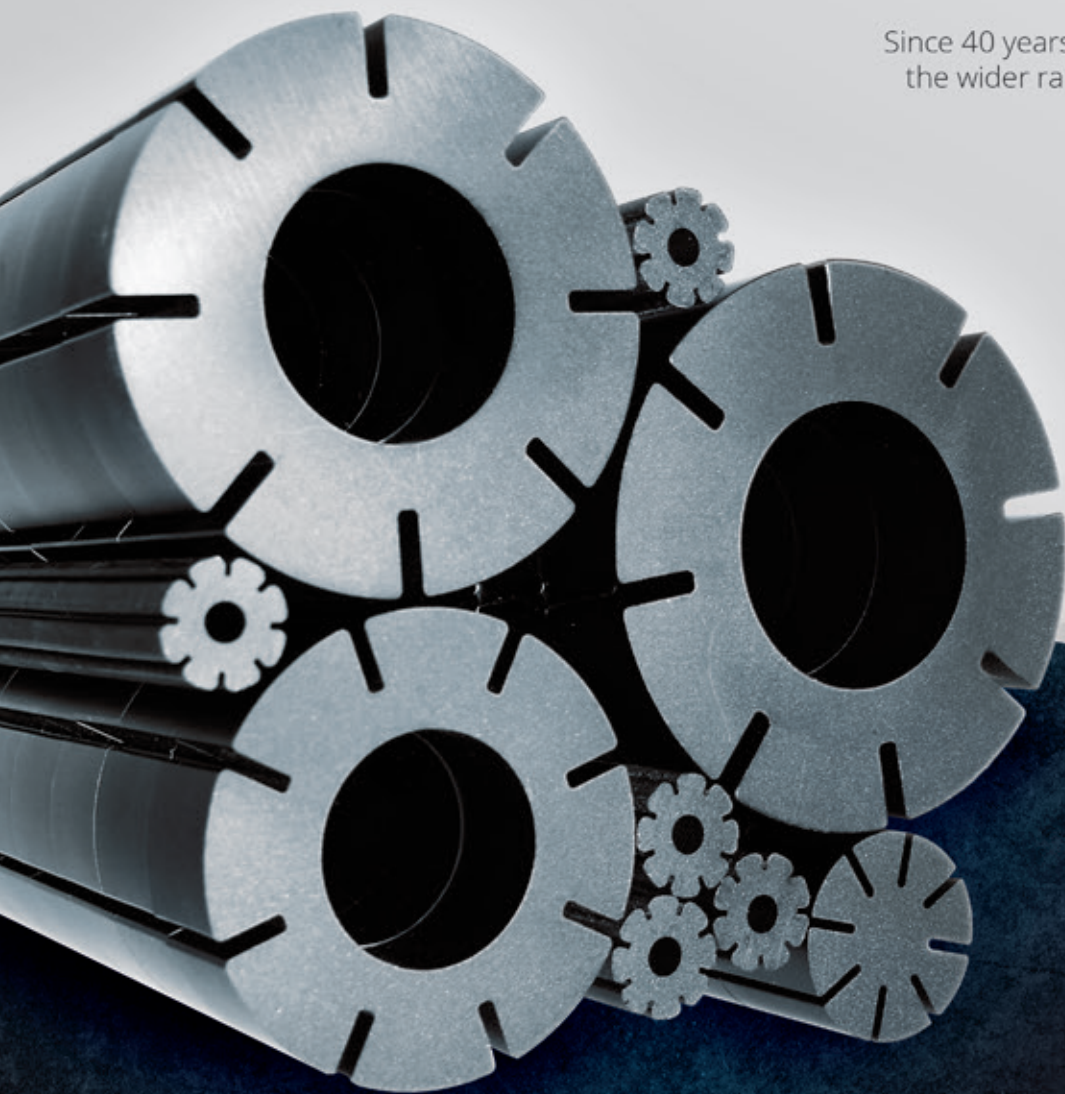
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## Pipe inspection efficiency improvements

MEASUREMENT and inspection technology specialist Optical Metrology Services (OMS) has engineered a new pipe bevel measurement tool that can help deliver improved weld quality and superior pipeline integrity. Bevel 360 was launched at the Pipeline Technology Conference in Berlin, Germany, in May.

OMS claims that the Bevel 360 device will provide welding contractors with new insights and understanding of bevel geometry at a time when cost pressures and process efficiencies, especially in the oil and gas sector, are paramount.

Designed and manufactured in the UK, Bevel 360 uses blue laser technology, designed specifically for use on reflective surfaces. The tool performs a complete scan of a pipe end within 30 seconds, producing a highly detailed 360° measurement profile of the bevel face. The tool interfaces with OMS's Bevel Pro software to provide engineers with a simple traffic light go/no-go system. The software is supplied on a dedicated laptop as part of the Bevel 360 system.

Undertaking more than 1,000 scans in under 30 seconds, the tool is capable of measuring pipe diameters ranging from 6" to 48" with a maximum pipe wall thickness of 45mm. The Bevel 360 is easily deployed into the pipe end by a single operator and is flexible enough to be utilised across a wide range of projects. Running off a standard 110-240 VAC system (with RCD), the tool is supplied with a tough case, making transportation simple.

The robust design is also able to measure an array of bevel types including plain, J-prep, J-prep with back bevel, compound and compound J-prep bevel.

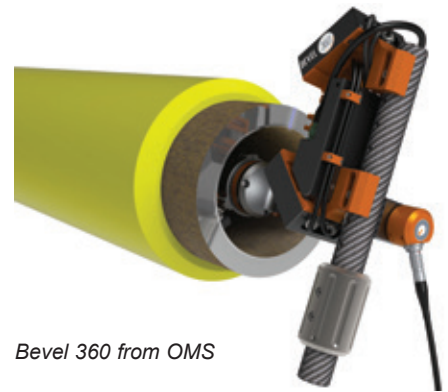
Denise Smiles, CEO of OMS, said, "Bevel 360 is a hugely exciting development for us and demonstrates our ongoing commitment to new product innovation. While the natural inclination for many suppliers to the oil and gas industry has been to pull back on investment, we took the decision last year to focus on the long-term future of the sector.

"With this in mind, we're determined to create value for businesses operating in this challenging sector. For us, this means creating solutions that improve efficiency, increase accuracy and reduce waste. Our Bevel 360 will revolutionise the task of ensuring that bevel profiles are consistently within project specification across the oil and gas industry."

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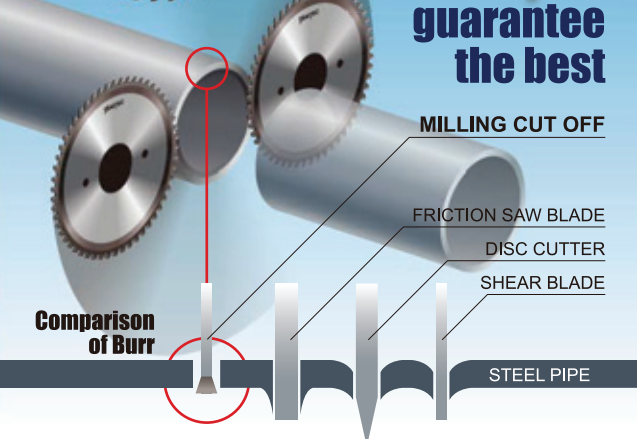


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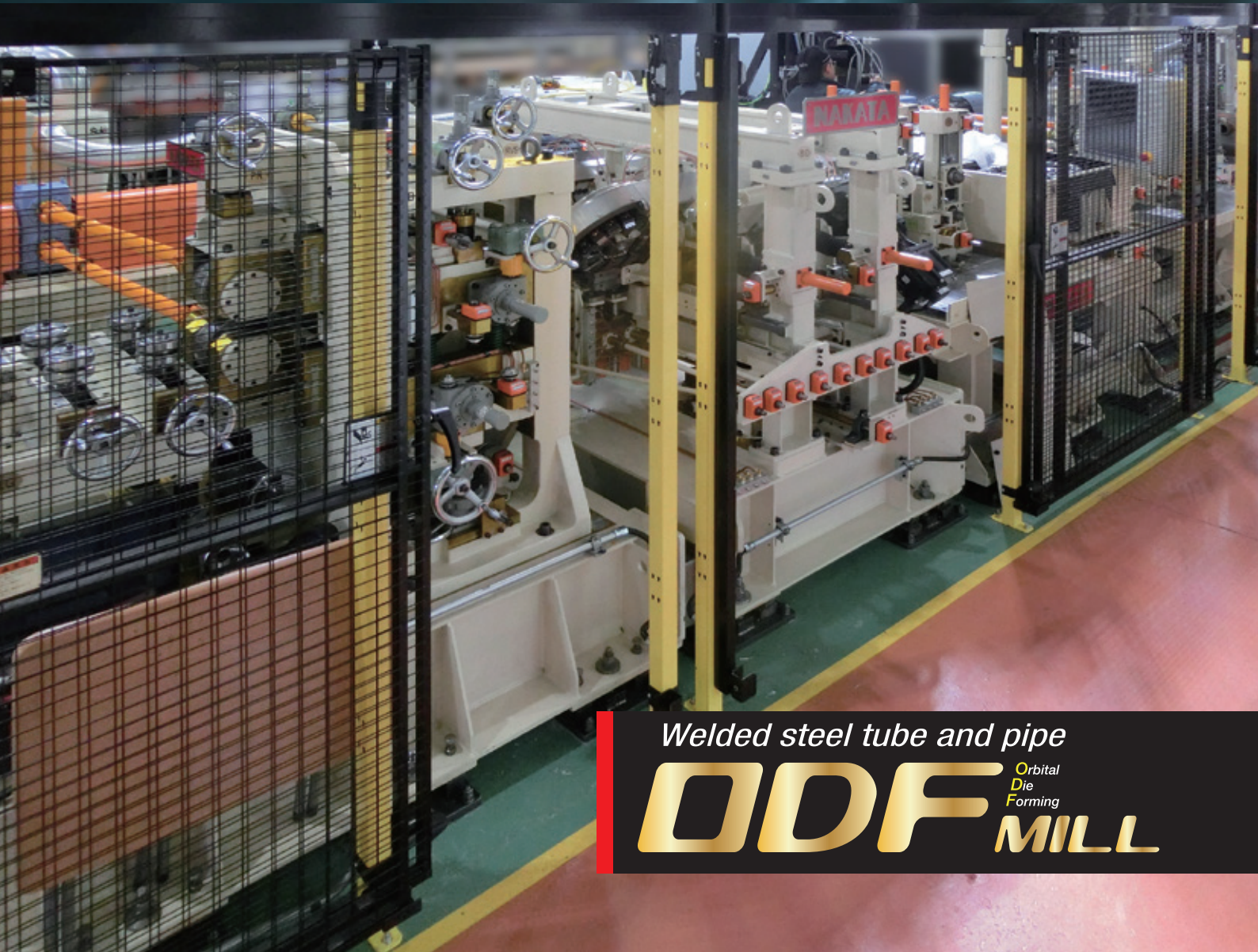
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# Unloading tube containers at their final destination from ships, trains and trucks

APPROXIMATELY 95 per cent of the world's cargo is transported on ships using containers, including tube products and machinery.

At any moment there are five to six million containers travelling around the world on ships, trains or trucks.

So how are these containers unloaded at their final destinations? Joloda International can provide a complete container loading/unloading solution. The system comprises a container jacking system, which is four free standing posts capable of lifting 35 tons. The individual legs locate into the corner casting of the container and lock into position via conventional twist locks. All legs are connected to a central control box and operated by a pendant.

This system lifts the container on and off the truck so that when the container is on the ground, the Joloda container

one-shot loading system is used to load/unload the goods in/out of the container.

The Joloda removable one-shot system can move loads of up to 28 tons. Skates run down a galvanised steel track, which is placed both on the loading platform and onto the container floor. The track is elevated by a hydraulic pump, lifting the skate, which then raises the load clear of the platform deck. The 'live' load can then be easily rolled into the container. Once loaded both the skates and the tracks can be removed.

Using the complete Joloda container system eradicates the need to use top- or side-loading containers, which are not readily available. All can be used in standard, end-loading, low cost containers. All equipment is removed after use and stored for when next needed.

For example, a customer of the company in Russia is currently moving pipes from St Petersburg for the oil industry. The load is around 25 tons and previously the unloading system was pushing and dragging the load, causing damage and delays in loading. With the Joloda International system the load is safely and securely moved in and out of the container in minutes.

The system is used worldwide by companies moving steel fabrications, steel sections, wood, machinery, pipes and any long, heavy, awkward loads up to 28 tons. Customers include Claas Machinery, Gulf Extrusion, Thyssen Krupp, Vestas, Maybe Bridge, Corus Steel, Schlumberger and VCK.

**Joloda International – UK**  
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## Hot crimping resistance welding systems

AMADA Miyachi Europe has announced the availability of complete hot crimping resistance welding systems, suitable for joining insulated copper wire to cable shoes or terminals. An option for high intrinsic value products, the hot crimping systems include weld heads, transformer, power supply and process monitor. The systems provide a fast alternative to removal of copper wire coating by lasers or mechanical means before making the electrical connection.

Amada Miyachi Europe specialises in consulting with customers to correctly match hot crimping applications with the right process and equipment. With a full range of resistance welding hot crimping technology, the company's solutions range from the highly delicate, fine control required to hot crimp wires as small as 40µm to the high power and high force required for very large wires.

The systems include a high-force Miyachi Peco weld head, which mechanically holds the electrodes and feeds the electrical current to them. An integrated water cooling system actively cools all components to prevent overheating during production. A Miyachi Peco power supply and transformer accurately emit the programmed electrical power. All electrical parameters can be guarded and stored by a Miyachi Peco MG3 resistance welding process monitor.

With the Amada Miyachi Europe hot crimping system, there is no metal stripping or removal, ensuring maximum strength.

A weld to displacement feature allows the equipment to be programmed to reach the specified compression, after which the current flow and heating is switched off. This compensates for part-to-part variation, and allows users to program a parameter that is closely related to joint quality.

Amada Miyachi Europe manufactures equipment and systems for laser welding, laser marking, laser cutting, resistance welding, hermetic sealing and hot bar reflow soldering and bonding. It customises its products around specific micro-joining applications for customers around the world. Product markets include medical devices, battery, automotive, solar industry, electronic components and aerospace.

**Amada Miyachi Europe GmbH – Germany**

Fax: +49 89 839403 68

Email: [infode@amadamiyachi.eu](mailto:infode@amadamiyachi.eu)

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## Inspection and analysis

PURITY Concept Systems guarantee quality and process stability by means of on- and off-line inspection and analysis.

With the new Purity Concept Systems from Sikora there are modularly designed systems available to plastic manufacturers and processors for on- and off-line inspection and analysis of pellets, flakes and films/tapes. The systems are based on X-ray, infrared or optical technologies and are suitable for a large range of applications.

While the Sikora Purity Scanner inspects online plastic pellets for contamination and sorts contaminated pellets out automatically, the Purity Concept Systems are used for on- and off-line inspection and analysis of plastics material. They detect and analyse contamination from 50µm and assure the highest material quality and stable production processes.

For monitoring production processes the plastics material is tested during raw material manufacturing on a random

basis. The Purity Concept Systems inspect material samples directly from the production and provide the material producers with valuable information about their processes.

Sophisticated products such as, for example, medical tubes require a reliable control and processing of raw materials. In the different processes of manufacturing plastic products contamination may occur. During the transport of material, contamination can get into the plastic pellets (eg at the unloading of the transport vehicles to the silo caused by dust or other foreign objects).

Commonly, manual samples are tested before the material is further processed. However, the smallest metallic or organic contamination from 50µm is not visible to the naked eye. There are, for example, high demands placed on purity in the area of injection moulding as the spraying nozzles can get clogged by contamination, which causes high follow-up costs.



*The Purity Concept System*

The Purity Concept Systems provide an efficient solution for automatic sample inspection at the incoming goods inspection and ensure that only pure raw material gets into the next production step and further processing.

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## Increasing the productivity of a tube and pipe mill

THE productivity of a tube and pipe mill is generally based on two sets of data, according to Dalian Field based in China: one set of data that looks at which kinds of products can be produced by the mill and the other data set that looks at how high a speed the mill can reach when dealing with different sizes of tubes.

Both sets of data are important for producers who have only a small number of mills. The second set of data is more important for producers who have many mills of different sizes. Taking an example of a Ø219mm/t x8.0mm pipe mill with 500kw HF welder, when the line speed is at 24m/min, wall thickness is decreased to 4mm and the line speed will be up to 60m/min; but due to drag from the cutting-off machine of the mill, the real speed can only be up to around 30m/min, because high speed will result in the short life of the saw blade.

There are two methods to increase line speed: double length cutting for off-line secondary cutting (which requires more space, more labour cost and therefore very few producers choose to do it this way); or double cart milling saw (FD patented technology) – a flying saw with increased line speed without a decrease to saw blade life. If line speed can be up to 60m/min when producing Ø219mm/t4.0mm, the max speed of this mill can be up to 120m/min (when producing size less than Ø114mm/t2.5mm). Productivity on one set of this kind of mill will be equal to that of two sets of normal mills.

In addition, it has already been proven that for producers who have only a small number of mills, the size that can be produced by the mills is very important. Taking the example of a Ø219x8.0mm pipe mill, a standard size range is at Ø114-219mm/t2-8.0mm; but if the minimum size can be at 76x1mm, and there is a mill of Ø12-76/t0.8-4.0mm, then various pipe sizes below Ø219x8.0mm can be produced with only these two mills.

The above examples tells us the significance for productivity. A good choice will not only decrease preliminary investment costs, saving land and factory investment, but is also an important economic and technical index that influences the cost of production for a long time in the future, which is a major determinant of competitiveness for pipe producers.

**Dalian Field – China**

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## Purging large diameter pipes for welding

WAITING for pipes to be purged ready for welding can take hours, depending on the diameter of the pipe being welded and the method chosen for purging.

Huntingdon Fusion Techniques (HFT) designs and manufactures a range of QuickPurge® inflatable pipe purging systems that reduce waiting times. The company was recently tasked with a special project in the USA, where pipes with 90° elbows, up to 54" Ø, were required to be purged.

Georgia Gascoyne, CEO at HFT, said, "We manufactured QuickPurge systems with longer sleeves so that they could easily be pulled around the sharp bends in the pipework. The welders were previously spending half a day purging the pipe, which was costing a considerable amount in time and gas costs. With the help of QuickPurge the pipe was purged down to 100 ppm ready for welding in just 55 minutes. The dramatic savings in time and argon paid for the system in just one weld."

QuickPurge has an additional gas input line, which means extra purge gas

can be introduced for applications such as this, achieving a faster purge down to the lowest oxygen levels, which is suitable for larger diameter pipes where quality welds are required.

The design of the QuickPurge system means that zero-colour welds can be achieved, and there will be no loss of corrosion resistance caused by oxidation.

Using IntaCal® combined with the integrated PurgeGate® device makes



HFT's QuickPurge systems

it possible to safely inflate the dams with argon gas, for purging the space between the dams where the weld joint is located.

With PurgeGate, burst dams are prevented in the event of undue pressure increase or accidental flow increase of the purging gas.

All systems are manufactured as standard with a hose for connecting a Weld Purge Monitor®, which can read oxygen levels down to as low as 10 ppm, depending on the model.

Materials used in the manufacture of QuickPurge are resistant to the higher weld temperatures present, and they do not outgas, preventing weld contamination.

For pre-heated chrome steel and high strength stainless steel pipe joints, HFT designs and manufactures the HotPurge™ range for a higher and longer temperature exposure.

**Huntingdon Fusion Techniques – UK**

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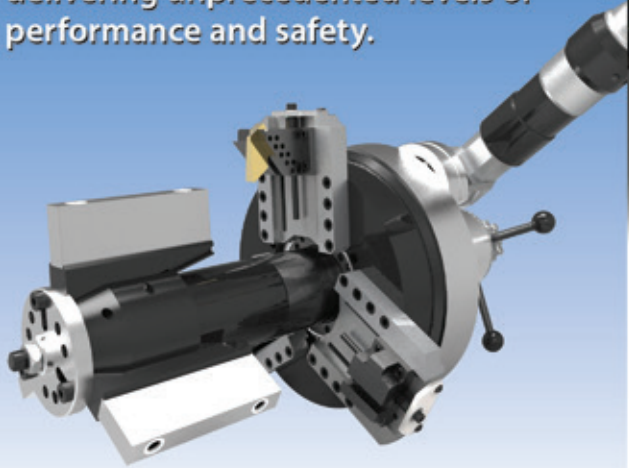
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## Pipeline integrity assessment solution

CREAFORM, a specialist in portable 3D measurement and engineering services, has announced its latest release of the Pipecheck 3.3 NDT pipeline integrity assessment solution. The comprehensive, easy-to-use tool is designed to enable NDT service companies and pipeline operators to strike a balance between the need to fulfil mounting demands for energy and guaranteeing the public's safety.

Pipecheck puts accurate assessments into the hands of users in order to quickly detect and characterise pipe defects (internal and external), such as corrosion and mechanical damage. With reliable, traceable results and code compliance (ASME B31G/ASME B31.8), Pipecheck automatically provides critical inspection data to determine the level of integrity and remaining service life of an operator's most valuable assets.

Creaform gathered requests from its pipeline operator clients and developed

new Pipecheck features to address the challenges they face. Enhancements in the latest version include:

- A new method for dent size calculations: More precise dent calculations that replicate repeatable and user-independent on-field measurements more accurately will enable users to better evaluate mechanical damage.

- Strain-based assessments 2.0: This new approach introduces advanced strain calculations, according to ASME B31.8, along the pipe, as well as visualisation tools for strain-based assessments. Users will be able to more efficiently interpret results, facilitating decision making with respect to the repair actions to take.

- A new feature for corrosion classifications: Based on standards issued from the Pipeline Operators Forum, Pipecheck now further characterises the type of corruptions on a pipeline, such as pitting, generalised

corrosion, and axial and circumferential grooving.

- Automatic anomaly vs cluster classifications: Pipecheck can now automatically distinguish and identify clusters from anomalies, helping operators pinpoint critical issues on a pipeline. This feature also helps to evaluate the performance of a pig as it detects anomalies and clusters. This in turn optimises where priority excavations must be performed.

"Pipecheck 3.3 is an operator's go-to solution to ensure public and environmental safety, meet regulatory requirements, prove compliance, decrease maintenance and repair costs, and streamline risk management procedures," explained Jérôme-Alexandre Lavoie, product manager at Creaform.

**Creaform Inc** – Canada

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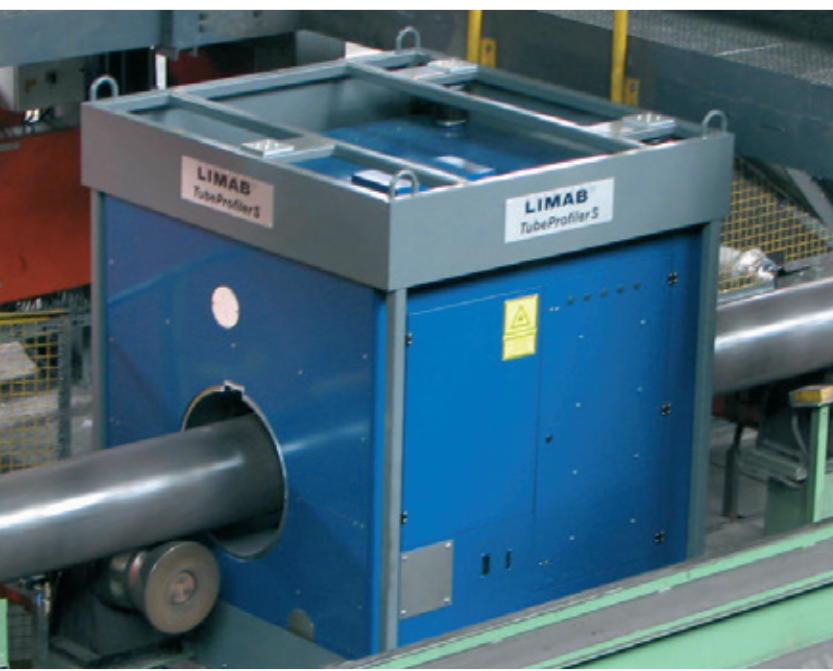
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## Cutting edge, automated pipe galvanising plant

By Ermes Moroni, general manager and founder, Gimeco Impianti Srl, Italy

HOW do you keep your industrial cost down and ensure that your quality standard is up to par with the strict requirements of today's market? Very often, there is one simple answer to this question: automation. Traditionally considered less applicable to general hot dip galvanising, automation is extremely proficient in standardised products, such as pipes. In times of thinner profit margins, having the whole process under control, while making sure the final quality is consistent, has become mandatory.

In 40 years of activity, Gimeco has established itself as a well-known Italian engineering and manufacturing company dedicated to the industry of pipe finishing and hot dip galvanising.

Gimeco now engineers and delivers complete lines for pipes finishing: hot dip galvanising, surface finishing, pickling, phosphating, straightening, chamfering and threading.

Pipe bundles up to five tons each are automatically transported through

the process with overhead cranes, fully controlled by dedicated software.

Gimeco's plants also feature full automatic chemical pre-treatment, consisting of an entirely segregated tunnel enclosure to control the acid vapour diffusion. While this ensures protection for workers, it also protects the building and crane equipment. On top of that, automatic "recipes" can differentiate chemical pre-treatment times, adjusting to variable features of different pipes. Stats on chemical consumption are also quickly summarised by dedicated software functions. As an additional option to waste management optimisation, Gimeco supplies a spent acid full regeneration system to convert the by-product into useful fertiliser.

A similar approach to energy and waste efficiency is taken in the high efficiency infrared drier, which pre-heats the pipes before entering into the liquid zinc. Infrared is combined with heat recovery from the galvanising furnace,

visualising the overall energy balance with a dedicated tool in the software suite. Fine control over process parameters becomes a key to quality and profitability in the galvanising bath. A dipping system with vertical screws is coupled with automatic single or twin pipe pick-up hooks, offering a good degree of freedom in tuning key factors. Pipes are forced to immerse, slowly rotating for better coating and draining. The first-in-first-out system is the best way to determine exact time of transit in zinc, so that given a certain product diameter or surface quality, each pipe will be absolutely consistent in final finish.

An outside zinc wiping system and inside zinc blowing system with protruding mandrel and flying nozzle offer very high surface quality and very low noise impact.

**Gimeco Impianti Srl – Italy**

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## High-output annealer for stainless steel tubes

PLASMAIT GmbH has introduced its largest annealer for stainless steel tubes to date.

The new HPA60 annealer features 60kW plasma power and is able to anneal up to 250kg (550lb) of austenitic stainless steel tubes per hour. It is designed for OD range of 1/8" to 1/2".

The output of the annealer is comparable to the outputs of similar induction annealers, yet its power consumption is up to three times smaller for the same output.

The required power connection is

therefore also three times smaller when compared to induction or conventional furnace. This alone could represent a considerable cost saving in terms of peak power consumption and cabling installation.

Efficient energy coupling also allows accurate heat input and more uniform recrystallisation, which is reflected in homogeneous grain size in the longitudinal and transversal direction.

The new annealer combines the advantages of high speed bright annealing and scratch-free surface finish. Processed material does not touch the plasma chamber when hot, which reduces the risk of surface scratching. This is different to the conventional strand furnace where tubes remain in contact with the furnace guiding supports during the maximum elevated

temperatures, when they are most vulnerable to surface damage.


A feature of plasma annealing is that heating is conducted in low-pressure inert atmosphere, for which a vacuum installation and accurate material guiding is necessary. The advantage of a vacuum system is that purging gas (usually hydrogen) is supplied at low pressure, which reduces overall purging gas consumption.

The new facility occupies about one third of the shop-floor area that is required by a conventional multi-line annealing furnace of the same capacity. A single plasma line can substitute around ten traditional lines on a conventional strand furnace, which reduces the investment required for transport systems, take-ups and payoffs.


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## New micro hardness testers

TWO new universal hardness testers from Buehler – ITW Test & Measurement GmbH offer a reliable solution for Knoop and Vickers micro-hardness testing in accordance with ISO 6507, 9385 and 4546 or ASTM E384 and E92.

The Wilson® VH1102 and VH1202 instruments meet high standards in terms of accuracy and can be used both in quality control and research and development. The testers offer flexibility, featuring deadweight loads from 10g to 2kg and nine different automatically selectable loading stages.

Both models in the new VH1000 series feature an ergonomic, adjustable 7" colour touchscreen for rapid test method selection and data collection. The system is intuitive to use and can be operated by less extensively trained staff after a brief period of training.

The wide load range with test scales from HV/HK0.01 to HV/HK2 is the same for both models. The usual knob for manual selection of test weights has

been replaced by a durable, software-controlled electric motor to automatically change test weights, providing a level of operator convenience on the new Wilson micro hardness testers that is normally found only on higher-end instruments.

The two models differ with regard to the electrically driven, high-speed, low-noise turret. The VH1102 model is equipped with a turret providing four positions, including an indenter for Knoop or Vickers and two standard objectives for 10x and 50x magnification at normal working distance. The VH1202 model is equipped with a six-position turret, including two indenters for both Knoop and Vickers, and an additional objective with 5x magnification at long working distance. For both models, simply pushing the Start button sets the turret to the magnification selected on the touchscreen.

The hardness testers can be configured to meet a wide range of requirements, from a stand-alone version for use in

laboratories with a relatively low sample volume, to a fully equipped system catering for high sample volumes in an industrial environment. The standard model includes a digital eyepiece for manual indent measurement, including camera connection capability and a USB port enabling data to be exported for further processing with a standard spreadsheet program.

The Buehler ITW Test & Measurement product portfolio comprises a full range of further Rockwell, Vickers/Knoop, Brinell and universal hardness testers with options for automation, as well as a variety of sectioning and precision sectioning machines optimised for specific applications, mounting systems including the associated epoxy and acrylic resins and grinding and polishing machines.

**Buehler – ITW Test & Measurement GmbH – Germany**  
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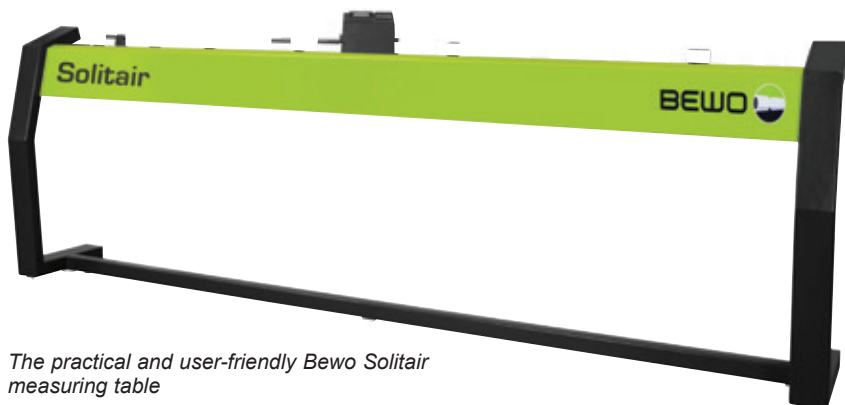
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## New measuring table from Bewo

LENGTH control of products in a cutting process is a vital part of the process, especially for controlling the length of cut and processed tubes or solids. Bewo Cutting Systems developed the Solitair to deal with this task.

The Solitair is a practical and user-friendly table for measuring product lengths. Besides developing the Solitair, Bewo is also a developer and producer of high performance automatic cutting machines and processing equipment for tubes and the strong, manually operated circular saw the Bewo CPO.

Ton Vugts, international sales manager at Bewo, explains why it is so important to check your product lengths during the cutting process: "The possibility of saw blade wear is always present. If the saw blade indeed shows wear, product lengths cannot be guaranteed. If you would check the length of every hundredth product with the Solitair, you will stay in control of the cutting process and you are guaranteed a batch with the desired product length."



*The practical and user-friendly Bewo Solitair measuring table*

The Solitair is a stand-alone measuring table and is suitable for measuring tubes and solids.

The Solitair measures products up to 3,000mm with a diameter up to 115mm. In addition the Solitair is based on the same concept as the familiar Bewo measuring table – the MT – but with a new design.

The main difference between the MT and Solitair is that the Solitair is

modularly built, using the latest production techniques. Bewo presented the practical Solitair measuring table at the Tube and wire exhibition in Düsseldorf, Germany, in April this year for the first time.

**Bewo Cutting Systems BV –**  
The Netherlands  
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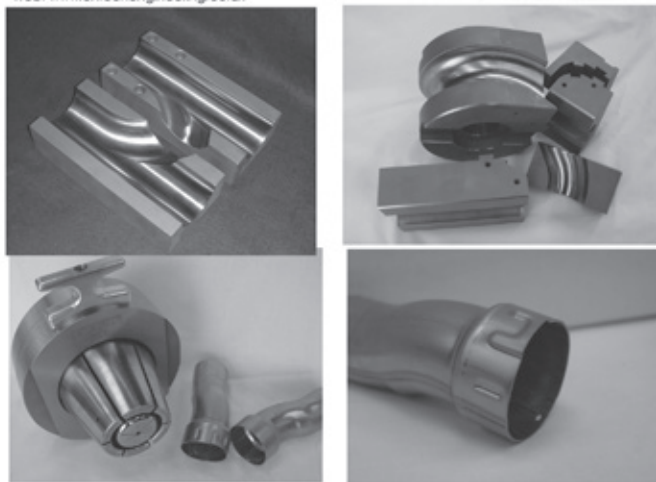
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THE Gullco Pipe KAT® is an automated orbital welding carriage designed for pipe welding applications.

Suitable for field pipeline manufacturing and power plant construction, the Pipe KAT is a fully integrated welding system that includes a remote control pendant to allow adjustment of critical application parameters during the welding process, including oscillation width, speed, dwells, wire feed speed and voltage adjustment.

The carriage operates on a track band made of durable aluminium extrusion by engaging the track with self-aligning wheels and a rack and pinion drive. This wheel assembly uses a lever to engage the track, making it quick and simple to install the carriage.

**Gullco International Ltd** – Canada  
Email: [sales@gullco.com](mailto:sales@gullco.com)  
Website: [www.gullco.com](http://www.gullco.com)



*Pipe KAT in operation on a pipeline in Brazil*

## Dedicated app for cutting professionals

ASA sawing industry first, Dutch circular saw blade manufacturer Kinkelder has developed a dedicated app for Apple, Android and Windows phones.

The Kinkelder app provides a wide range of free information on saw blades and steel cutting applications. The app allows the user to find local Kinkelder distributors, check the company's HSS and TCT product range, choose the most suitable saw blade for specific applications, and have extensive technical details at their fingertips.

Kinkelder catalogues can be viewed, downloaded and shared, and the app presents the latest Kinkelder news, including details of local exhibitions where the company is being represented. The app is currently only available in English, but other languages will be available soon. It can be downloaded for free via iTunes/Apple App Store, Google Play or the Windows Store.

Kinkelder was founded in the Netherlands in 1945. Ninety per cent of its production is designated for export to approximately 70 countries. Outside the Netherlands, the company has its own sales, service and/or production

branches in Germany, the USA, France, Belgium, Czech Republic, the UK and China. The rest of the world is covered by a network of dedicated distributors.

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## New combination machines for axial and rolling pipe forming

THE engineers at transfluid have developed a new generation of combination machines that effectively combine the benefits of the axial and rolling forming.

The plants are characterised by their diversity in forming of parts, as Stefanie Flaeper, managing director at transfluid, explained: "Geometries in pipe end machining can be formed directly on the pipe, replacing usually complicated and expensive turned parts.

"No soldering or welding is needed. The pipe and its end form are virtually from a single cast."

The benefits of this kind of process are clear: implementation of the combination can be specified by the user directly, or based on the forming geometry. "Usually, up to six axial forming stages and at least one rolling unit are used. If trimming, axial and rolling forming are needed, two rolling

stations may be required as well," said Ms Flaeper. "We also call this 'powered axes'."

Pipe machining may include a simple trim or deburring at the pipe end after forming.

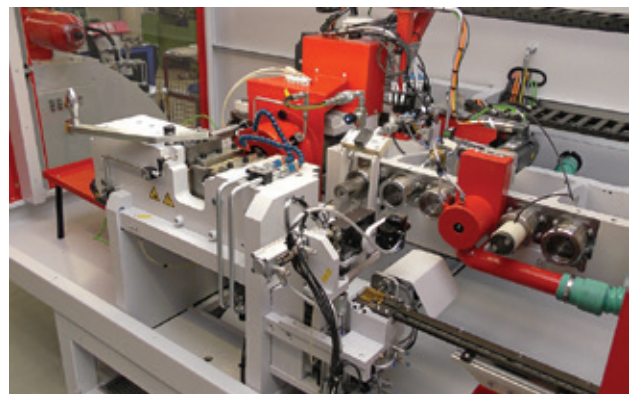
Because this is not a demanding process-technical challenge, it is sensible to use compact units for this. transfluid has made it possible to equip all axial forming machines and all combination machines with one or several single-drive axes. These axes have a servo-electrical drive and can be used for the forming stages in each of the holders. This makes the system very compact and particularly flexible.

Because the transfluid combination machines have electrical drives, all forming tools are positioned very precisely and the machines can be used much more diversely.

**transfluid** – Germany

Website:

[www.tube-processing-machines.com](http://www.tube-processing-machines.com)



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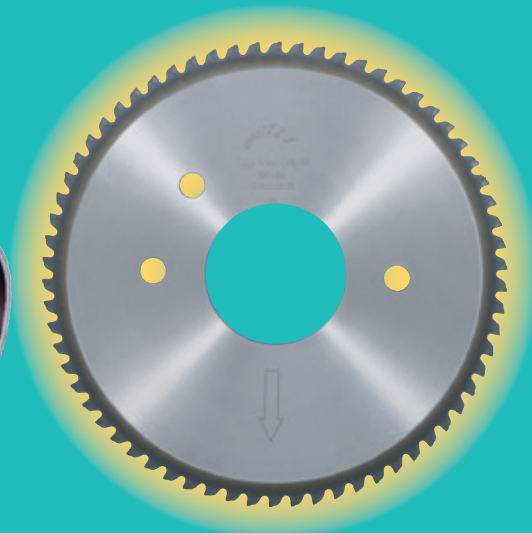
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## Composite repair system applied to own plant

HENKEL's main manufacturing plant in Düsseldorf, Germany, incorporates 18km of pipe bridges and 300km of pipelines. Over time, sections had become corroded, and their repair was subcontracted to the company Xervon. In order to repair leaks quickly, safely and sustainably, Xervon used Henkel's recently introduced Loctite® Composite Repair System, also creating a reference

site for the process. The system allows corroded pipes to be repaired without interrupting operations, avoiding the high costs associated with unplanned shutdowns. It effectively eliminates the need for pipe sections to be replaced, and extends the lifetime of the repaired pipework system.

"Our target is to extend the service life of pipes by 20 years and we are



confident the Loctite Composite Repair System will last far beyond that," commented Carsten Sperlach, who heads the technical infrastructure department at the Düsseldorf site.

The first step of the process is cleaning, by sandblasting the surface of the defective pipe section to a cleanliness level of SIS SA 2.5. The blasting also produces a roughness of 75 micrometres peak-to-valley height in the steel surface, and the resulting surface texture ensures physical anchoring in addition to the adhesive bonding with the coating material.

Loctite SF 7515 is applied as a short-term corrosion inhibitor to prevent flash rust. The pipe is then wrapped with several layers of the high strength, glass-carbon fibre tape Loctite PC 5085, which has been impregnated with the two-part epoxy resin Loctite PC 7210. Finally, several layers of topcoat – Loctite PC 7255 – are applied as corrosion protection.

The repair system has been certified by DNV CL in accordance with the global quality standard ISO 24817. This standard defines the criteria for the use of composite systems in petrochemical, oil and gas industries. The method has also been approved by Lloyd's Register, in conformity with ASME PCC-2 standard, and by TÜV Rheinland.

Xervon, one of a growing number of service providers that make up the Henkel Certified Applicator network across Europe, underwent an extensive qualification process to achieve the status. The Composite Repair System is being used in refineries, petrochemical plants, power plants and water treatment systems. Core applications are in the oil and gas industry, where the system can be used in all upstream, midstream and downstream areas.

**Henkel AG** – Germany  
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## Ebm for tube and sheet metal forming

EBM specialises in tasks concerning tube and sheet metal forming. It has 50 highly skilled employees and is a manufacturer of electrically operated or hydraulic-driven machines and systems.

The company offers standardised and individual solutions, which are always tailored to the customer's requirements, whether that is the need for automatically or manually operated machinery. From the initial planning of a product until the start of production the customer is supported by 30 years of experience, professional engineering and extensive R&D abilities. Innovative solutions are possible due to access to CAD design and tool shops.

Ebm is active in several business areas: standard and special machines for tube and sheet metal forming; tools for tube and sheet metal forming; engineering and services; and the prototyping and production of small

batches. In the field of tube forming its programme includes machines for radial forming, axial forming, cutting, rolling and stamping. One of the company's latest developments is an electric-operated axial-tube end-forming machine called C50VE, with five forming stations.

The machines of series C are suited for tube end-forming of all metal materials. Several processes like sinking, tapering, expanding, swaging, crimping and calibrating can be applied. Simple designs can be formed with just one tool. For complicated designs, up to five tools can be operated. In addition, the clamping of three D-bent tubes up to a diameter of 120mm is possible due to the C-frame.

**Ebm Erich Büchele Maschinenbau GmbH** – Germany

Email: [vertrieb@ebm-maschinenbau.de](mailto:vertrieb@ebm-maschinenbau.de)

Website: [www.ebm-maschinenbau.de](http://www.ebm-maschinenbau.de)

## Ten-roll tube straightening

ONE OF Germany's largest manufacturers of precision tubes has placed an order for another ten-roll tube straightening machine from Bültmann, to be supplied to one of its German facilities.

The decisive factor was the performance of the ten-roll tube straightening machine previously supplied to the customer. The straightening quality achieved on that machine exceeded the agreed criteria and offered the customer a significant competitive advantage.

In addition, the automatic, reproducible machine setting offers the customer time advantages during dimensional change and a respectively higher production capacity. The customer also emphasised the order processing of Bültmann, ensuring the integration of the machine into the existing production line.

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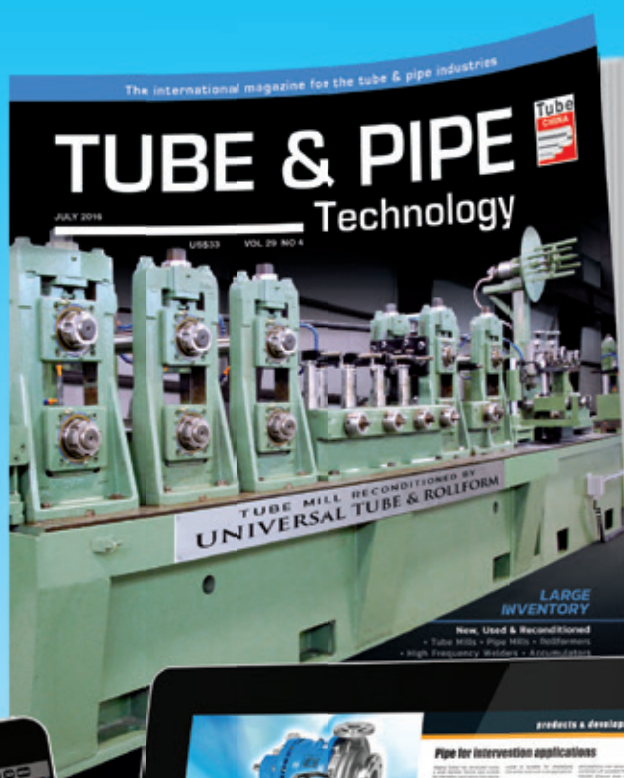


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## Automated storage and retrieval

HIGH performance engineering steel is stored safely and picked more efficiently at Oldbury-based Bohler-Uddeholm (UK) since it invested £3mn in an automated Kasto Unicompact warehouse and a further £1mn in other site improvements. The computer-controlled storage and retrieval system became operational in the first quarter of 2016, having been systematically populated with bar, tube and other long stock that was previously held in conventional cantilever racking.

The immediate and future benefits are far-reaching. The number of forklift trucks on site has been cut from 15 to six, reducing overheads, making the working environment safer for personnel and cutting diesel emissions. In addition, warehouse operator costs have been lowered by 15 per cent, with personnel redeployed to other duties.

There has been an 80 per cent saving in floor area. The Kasto store has a 1,000m<sup>2</sup> footprint, whereas previously 5,500m<sup>2</sup> was required to stock 2,600 tons of material, although the new tower can easily hold double that amount. The freed floor space will be used to increase the number of bandsaws, machining centres and grinders to allow Bohler-Uddeholm (UK) to carry out more added-value processing.

Bohler-Uddeholm is part of the Special Steel Division of voestalpine Stahl AG, which owns specialised mills in Austria, Germany, Sweden and Brazil producing cold and hot work steels, mould and tool steels, high-speed steels and various alloys including nickel-based varieties.

The Kasto Unicompact 3.5 at Oldbury is the sixth bespoke warehouse manufactured by Kasto in Germany for Bohler-Uddeholm group distribution centres worldwide. The 37m-long store contains 2,377 travelling cassettes capable of holding steel bars and tubes up to 8m long to a maximum weight per location of 3.5 tons. Useable width of the cassettes is 620mm and there are three height variants – 180mm, 220mm and 450mm.

The automated storage and retrieval facility is 15m high and has been built onto the end of the original warehouse at Oldbury, which is nine metres high. Exterior parts of the extension have weatherproof cladding, including a 26m long end wall and the four sides of the tower that are above the 9m roof line. An integrated overhead

gantry crane feeds 12 cassette buffer stations, where operators put material away into store and pick orders. Some material is transferred to 17 automatic bandsaws and on to other machine tools, all of which are now close to the store. Previously, material on racking had to be found by the picker and moved through two bays by lift truck

for processing. This entailed significant operational cost disadvantages, health and safety risks associated with manual material movement and potential delays in supplying customers.

**Kasto Ltd – UK**

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It also improves wire conductivity over competitive non-copper coated wire. The elimination of surface copper in Emergence decreases the risk of weld contamination. The right selection of contact tip and wire is critical to



maintaining an optimal production process. Emergence wire doubles the life of contact tips, resulting in consistent arc starts, wire placement and weld deposit, and less downtime and lost production due to frequent change outs.

Emergence is part of a comprehensive product line to support every pipe seam application. The exact wire composition of Lincoln Electric's copper coated wires makes requalification for welding procedures controlled by classification easy.

**Lincoln Electric – USA**  
Website: [www.lincolnelectric.com](http://www.lincolnelectric.com)

## Enhanced coupling makeup machines

WITHIN its product ranges for oil and gas pipe finishing lines, Lazzari has improved the design and technical features of its high-productivity Coupling Makeup machines (CM), in order to meet the latest requirements of API standards for quality and increased performance.

All components of the CM series machines have been redesigned and improved to allow a fully automatic complete cycle to apply couplings on tubing and casing pipes up to 508mm (20") nominal OD, up to a maximum torque of 130,000Nm in the case of special Premium coupling types.

The machine controls and measures the values of torque and turns during

the whole pre-screwing and screwing operation, recording the graphics of the coupling final screwing with torque priority or position priority. The machine operator works from a touch panel, guided by an icon system, to manage the receipt of pipes and machine data, as well as machine diagnostics and alarms.

The machine mainly consists of a robot to load the couplings directly from the coupling container, a storage chute for the coupling measurement and for the dope application on the coupling thread, starter unit, screw-on unit, short drifter unit, pipe transfer unit by rotating arms, a set of durable tooling,

and auxiliary hydraulic and electrical equipment.

The equipment to be supplied is manufactured with high quality materials and components, ensuring long-life performance and reliability. Lazzari also guarantees efficient supervision to the erection and putting into operation at the buyer's site, as well as constant assistance through online connection and availability of the service of its technicians.

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## Software for in-process measurement and control

LASERLINC, Inc, a US manufacturer of precision measurement equipment for diameter, wall thickness, ovality, concentricity and inside diameter, has announced the latest release of its flagship Total Vu™ HMI software.

The Total Vu HMI hosts LaserLinc's line of laser micrometers and ultrasonic devices. The latest release provides the flexibility to make the optimal solution for in-process measurement and control, or inspection applications.

Fully customisable displays can optimise what the operator sees, and tabbed displays make navigation easy – multiple displays or touchscreens put access wherever needed.

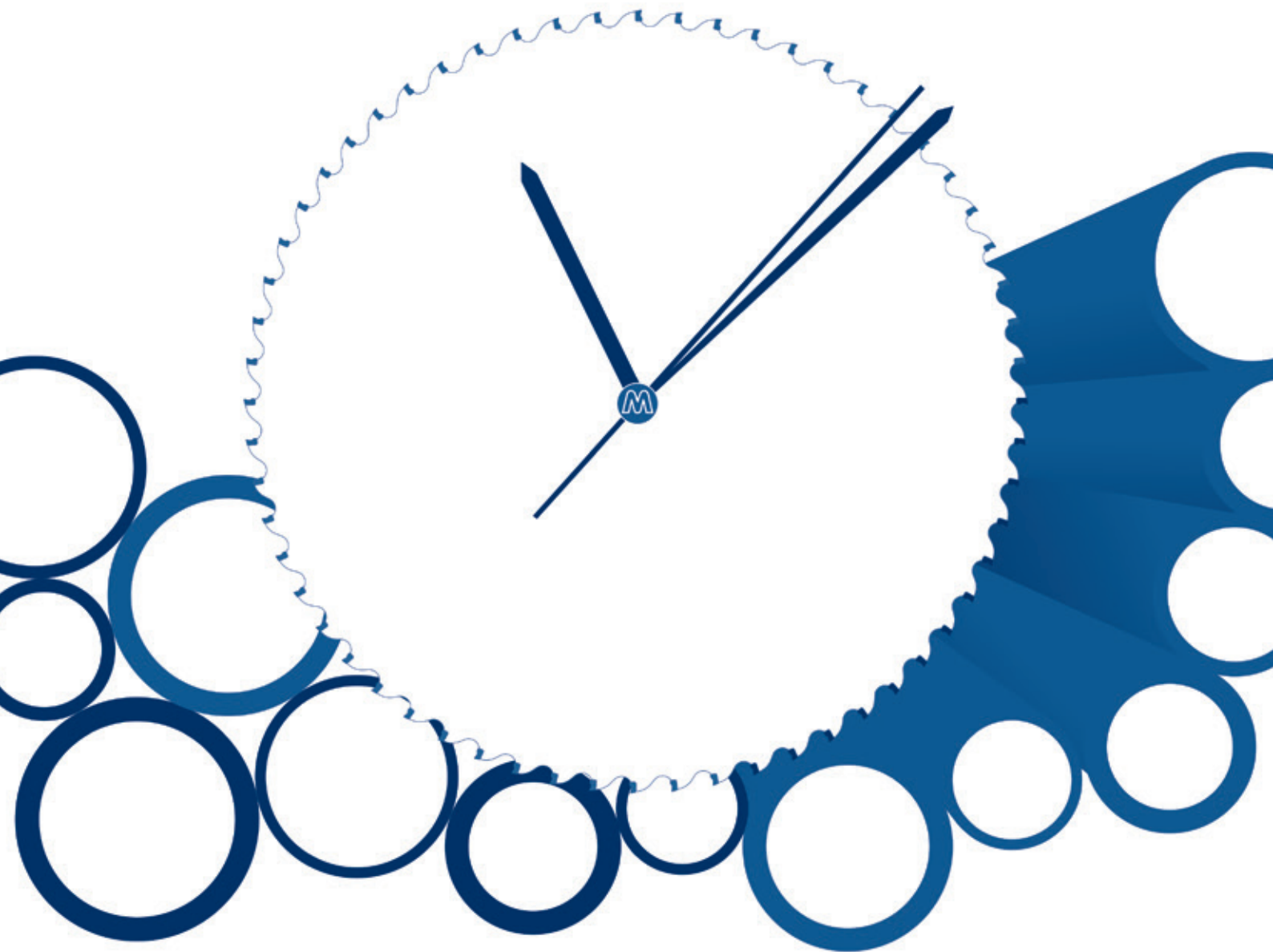
Features include reporting and enterprise-wide integration; electronic and print report generation; customised templates with Excel; and OPC Client and Server software that permits seamless sharing of information with enterprise



systems. A variety of connections can be used, including Ethernet to laser OD gauges, ultrasonic wall gauges, and discrete I/O. Processor options include industrial, all-in-one, mini and laptop, to satisfy cost, environmental or other needs. Off-the-shelf hardware and cables allow easy purchasing, installation,

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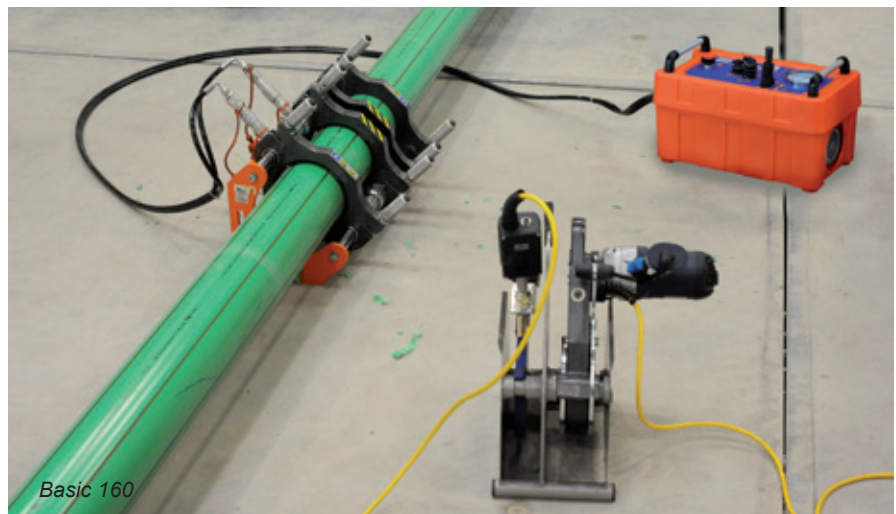
## PP-R welding solution

RITMO'S Basic is a range of welding machines for PP-R and other plastic pipes such as HDPE, PB and PVDF, for industrial or civil use. The Italian-made machines are designed for precision and ease of use, and follow all of Ritmo's quality standards.

Basic 160 is a small welding machine with a working range of Ø 40 to 160mm (1" to 5" IPS), while the largest of the line – Basic 355 – is for 125 to 355mm (4" to 14" IPS).

Basic 160 includes a machine body built with a supporting frame, four clamps and two hydraulic cylinders with fast, non-drip coupling connections.

The Teflon-coated (PTFE) heating plate has a built-in independent thermometer to check the working temperature, and a high-precision electronic thermoregulator, 'Digital Dragon', ( $\pm 1^{\circ}\text{C}$ ) with digital display and regulating buttons. The system includes LED indicators to show if the machine is working normally (live tension and working temperature), and to alert the user to contingent probe failures or temperature anomalies. An extractable electric milling cutter, to face the heads



of the pipes and fittings, includes a safety micro-switch and a thermal circuit breaker. The electro-hydraulic gear case is protected from crashes and atmospheric corrosion by a plastic box.

The machine includes a control lever to open and close the clamps, maximum pressure and discharge valves (also useful for the 'dual pressure' welding process), hydraulic connection hoses with fast couplings, and a timer to check

the warming and welding time. The machine is pre-set for the connection of the electronic controller 'The Inspector'.

Basic 160 is able to weld fittings such as elbows, tees, Y-branches and flange necks, and is available in 110V and 230V versions.

**RITMO SpA** – Italy  
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*Machines from the Basic range at work on the job site*



## Inspection, testing and quality control

CONTRÔLE Mesure Systèmes (CMS) is a specialist in non-destructive testing and, with a complete NDT range of products in eddy current and ultrasonic methods, can supply solutions for most industrial applications.

CMS's product line is designed to meet inspection, testing and quality control on both ferrous and non-ferrous products, including steel, copper, alloys, carbon

steel, stainless steel and aluminium. Applications in tube, bar, pipe and wire inspection include surface flaw detection by RotoETscan eddy current rotating head; internal and dimensional flaw detection by RotoUTscan ultrasonic rotating head; tube inspection with product in rotation; full body and/or weld of welded tube inspection; full body and/or ends of non-welded tube inspection;

defect detection on double wall tubes; and heat treatment, hardness and coating verification and measurement.

CMS will exhibit at Tube China 2016 from 26 to 29 September at stand E1D20.

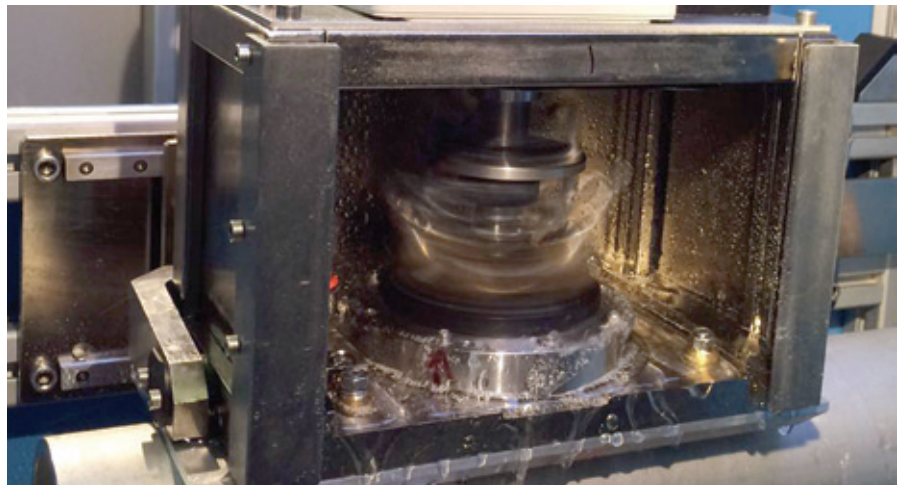
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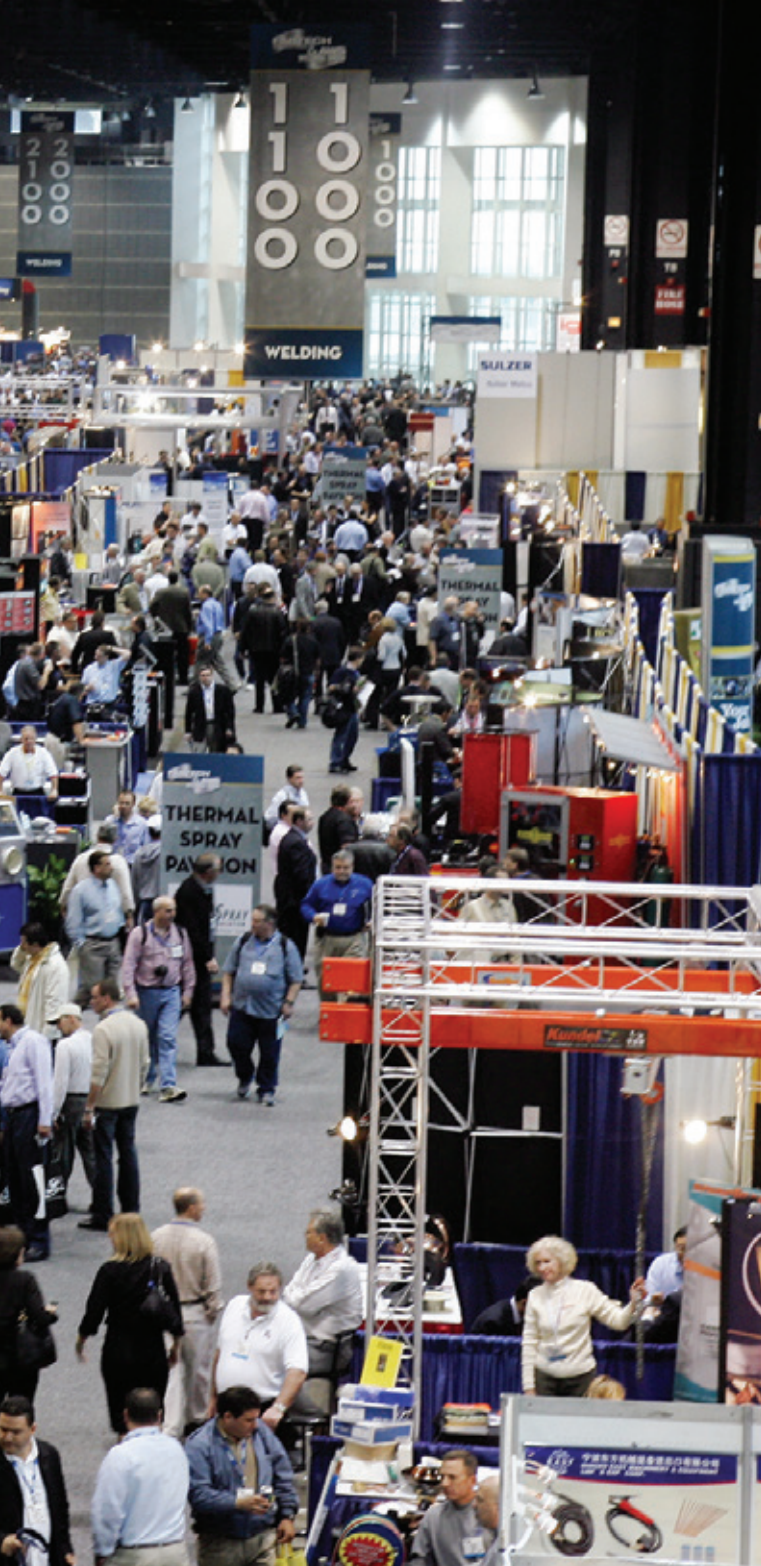
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## Automotive

### Three roadway accidents, one of them fatal, have in common the ambiguously named Autopilot feature from Tesla

In the third accident reported over a two-week period involving a Tesla Motors car operating in semi-autonomous Autopilot mode, on 10 July the driver of a Tesla Model X and his passenger escaped injury in a one-vehicle accident in Montana. According to Montana State Trooper Jade Schope, the driver said he activated Autopilot on setting out from Seattle, Washington.

As reported by the driver, he was exiting a two-lane highway after midnight when the fully electric SUV began veering to the right and hit a wooden guardrail before coming to a stop. Mr Schope told the *Detroit Free Press*, "He lost the right front wheel and there was extensive damage to the front of the vehicle." ("Another Tesla Veers Off Road, Crashes Into Guardrail in Montana," 11 July)

Earlier, Joshua Brown died on 7 May in Williston, Florida, when the Autopilot system of his Tesla Model S failed to detect a tractor-trailer turning in front of the luxury all-electric sedan. The investigation found that Mr Brown had been watching a video in the car at the time of the crash. It has not yet been established whether the accident was the fault of the car's technology, Mr Brown, or the driver of the tractor-trailer hit by the car.

In the third episode, on 1 July two men were injured when a Tesla Model X hit a guardrail along the Pennsylvania Turnpike, crossed over several lanes, then hit a concrete median and rolled onto its roof, taking extensive damage. The driver told a Pennsylvania state trooper that the car was operating in Autopilot mode. Greg Gardner of the *Free Press* noted that, while it is unclear whether driver error contributed to the crash, according to a police report released on 11 July a careless driving citation was issued.

#### HANDS-OFF OR HANDS-ON?

Autopilot is not in fact an autonomous-vehicle (AV) technology but employs computer software, sensors, cameras and radar to, in Tesla's words, "automatically steer down the highway, change lanes, and adjust speed in response to traffic." These features are said to reduce the driver's workload and help to avoid hazards. But Tesla advises that Autopilot is meant to be used with eyes on the road and both hands on the wheel.

That is not enough for *Consumer Reports*. "'Autopilot' can't actually drive the car, yet it allows consumers to have their hands off the steering wheel for minutes at a time," wrote Laura MacCleery, vice-president of consumer policy and mobilisation for the advocacy group, in a 14 July statement. "Tesla should disable automatic steering in its cars until it updates the program to verify that the driver's hands are on the wheel."

*Consumer Reports* experts believe that Tesla drivers are confused by conflicting messages: one saying that Autopilot

is driving the car; the other, that the controls may need to be wrested back at a moment's notice. As a result, noted Mr Gardner of the *Free Press*, "Drivers using Autopilot may not be engaged enough to react quickly to emergency situations."

➤ *Consumer Reports* also urged that Tesla rename the technology – another recommendation which Tesla co-founder and CEO Elon Musk did not take up. Declaring that the company has no plans to disable Autopilot, Mr Musk told the *Wall Street Journal* that it would publish a blog instructing Tesla owners in the safe use of Autopilot.

The Tesla CEO did make one concession, however. In Twitter posts on 14 July, Mr Musk said the company was working on improvements to the radar system of Autopilot.

### As car ownership loses some appeal, automakers hedge their bets with the likes of Uber, Gett and Lyft

Two of the world's largest automakers, Toyota and Volkswagen, announced they are investing in technology start-ups whose mission is to change the habits of the driving public. Toyota said it had formed a partnership with and invested an undisclosed amount in the world's biggest ride-hailing company – Uber, of the US. Gett, the Israel-based startup that connects customers with taxi drivers, said that it has attracted \$300mn from Volkswagen.

Similar initiatives remarked by the *New York Times* include General Motors, which in January invested \$500mn in San Francisco-based Lyft, the ride-hailing app. Ford Motor is making over its Dearborn, Michigan, headquarters into a Silicon Valley-like campus traversed by self-driving shuttles. Fiat Chrysler and Google have an agreement to produce a test fleet of driverless minivans. In Germany, BMW and Mercedes-Benz have started to pilot-test ride services.

As noted by *Times* reporters Mike Isaac and Neal E Boudette, these alliances form a string of pairings between technology companies and car companies scrambling to reposition themselves. The traditional automakers, they wrote, "are looking toward a technology-driven future, one where they increasingly acknowledge that getting around may not require owning a car." ("Automakers Befriend Start-Ups Like Uber, Girding Against a Changing Car Culture," 24 May)

They are some years short of a payoff on their investment, according to Karl Brauer, an analyst at the car valuation firm Kelley Blue Book who sees no early sign that "mobility services" – car-sharing and ride-sharing – are hurting the automotive industry. Auto sales in the US hit a record high in 2015 and are rising this year. And China and other international markets will likely ensure continued growth in the global auto market.

Even so, Mr Brauer said, auto makers are investing in companies like Uber "to be ahead of the curve" if and when the startups do shake up the norms of car ownership. He told the *Times*, "History has shown that if you wait for the market to decide, you're dead."



## Oil &amp; gas

## What would a Donald Trump presidency mean for the US oil and gas sector? Mexico offers a bracing preview

Ending a 75-year state monopoly, in 2013 Mexican President Enrique Peña Nieto proposed a series of reforms to transform his country's energy sector, opening it up to foreign investment.

The reforms became law in 2014. Since then, foreign investment has poured into Mexico "and the energy has flowed in both directions," observed Emily Stewart, a staff writer for the New York-based digital financial media company *TheStreet*. She noted that many US-based energy companies have benefited.

Taking advantage of Mexico's shift from fuel oil toward natural gas as a power source, US energy companies have participated in auctions for Mexican oil contracts and cooperated with state-owned petroleum company Pemex to develop its oil holdings, increase production, and improve technology and infrastructure.

But, wrote Ms Stewart recently, expert opinion suggests that all that may be in jeopardy if Donald Trump is elected the next president of the United States.

Mexico is the second-largest trading partner the US has and, at \$19bn, fossil fuels represent its fourth-largest export. Stephen Munro, a policy analyst with *Bloomberg New Energy Finance*, pointed out that, as a developing economy, Mexico has a far greater potential for growth than Canada.

In the matter of energy exports, he told *TheStreet*, it represents "the single most important continental market that American energy firms have."

Ms Stewart stated it plainly: Mr Trump's pledges to build a wall at the US-Mexico border, shut down immigration, and curtail or renegotiate the North American Free Trade Agreement (NAFTA) could have major implications for the American energy sector. ("Here's How Trump's Wall Could Block US-Mexico Gas and Oil Pipelines – Mexico's liberalization of its energy sector has opened up numerous opportunities for business for US companies, but a President Trump could potentially roll that back," 13 July)

Alan Krupnick, senior fellow of the Washington-based independent and non-partisan Resources for the Future Center for Energy and Climate Economics, said that what Mr Trump fails to see is that his policies are "extremely short-sighted and without logic" and would work against the interests of North American companies active in Mexico.

Chief among the companies with the most to lose under a Trump presidency are those that have built infrastructure to move natural gas from the US into the Mexican market. They include Kinder Morgan, NET Midstream, TransCanada and the Sempra Energy subsidiary IEnova.

### PAIN ON BOTH SIDES OF THE BORDER

According to the US Energy Information Administration, US natural gas pipeline exports to Mexico reached 102.6bn cubic feet in April 2016, up from 77.2 BCF just a year before.

"We export natural gas to Mexico more than anything else," said *Bloomberg's* Mr Munro, speaking of the US. "More than coal, more than oil, more than electricity. So that's where the real potential damage lies."

It was pointed out by *TheStreet* that Mexico's liberalisation of its energy market compounds the issue. Importing more American natural gas to serve the heavily-industrialised northern parts of the country, Mexico has been sending its own gas supplies south.

A change in US policy in relation to free trade with Mexico would, Ms Stewart wrote, "put this process in jeopardy and throw off plans laid out by businesses and consumers on both sides of the border."

These are edited excerpts from industry sources who weighed in on developments that may lie the other side of presidential election day in the US (8 November):

➤ S&P Global Platts, a provider of information and benchmark prices for the commodities and energy markets, expects natural gas exports from the US to Mexico to average 5.3 billion cubic feet per day (BCFPD) in 2021, accounting for 57 per cent of Mexico's natural gas supply. US production will grow by 15.1 BCFPD over the same period. "If Mexican demand fails to materialise due to upcoming political [ie Trumpian] changes in policy, prices and producers in the US will be affected," said Javier Diaz, manager of energy analysis and consulting at the firm.

➤ Since opening up its energy sector to foreign investment, Mexico has held a series of auctions of its oil fields. One early bidder, Houston-based Fieldwood Energy LLC, announced in January that it already had signed a production-sharing contract in partnership with PetroBal, a Mexican company. Other big US oil companies like ExxonMobil, Chevron, Marathon Oil, Occidental Petroleum and Anadarko Petroleum likely have an eye on Mexico's oil bidding as well. However, noted Ms Stewart, should a Trump presidency change US-Mexico relations, the opportunities on the horizon could evaporate.

Said Mr Diaz of Platts, "It would affect the whole value chain in energy if such a disruption happens."

➤ Doug Holtz-Eakin, president of the American Action Forum, sees possibility for even wider impact.

"If [Mr Trump] pursues a NAFTA renegotiation, it would harm our relationship with Canada as well," Mr Holtz-Eakin told *TheStreet*. "At the moment we have a fairly integrated North American energy supply system, and this would choose to fragment it."

Wind, solar and other forms of energy could take a hit as well, warned Mr Holtz-Eakin: It is important, he said, "not to think this is just a couple of oil companies."

## When the United States reaches full employment, oilfield services companies and drillers could face a shortage of workers

"I don't see how the [US oil] industry comes back to any level of activity that is busy without a breakneck amount of chasing bodies, and there just aren't going to be enough to go around."

The speaker was Jeff Bush, president at Denver-based CSI Recruiting. The "bodies" to be chased are the many oilfield workers who, as Mr Bush told the business news TV channel *CNBC*, will not be easy to round up when the current boom-and-bust cycle in the industry has run its course.

Government data released in July showed the US added a whopping 287,000 jobs in June, and the nation's unemployment rate held below 5 per cent. The question, according to *CNBC*'s Tom DiChristopher, is whether workers flushed out of the industry and into a resurgent US labour market will head back to the oil patch.

Mr DiChristopher observed that recruiters have long warned that layoffs could come back "to haunt an industry still dealing with a shortage of mid-career workers following the 1980s oil bust." It is no minor concern. Current projections indicate that the US oil industry will need to hire tens of thousands of workers over the next two and a half years as oil prices recover and drillers stand up rigs. ("Oil and Gas Industry Could Hire 100,000 Workers – If It Can Find Them," 8 July)

The recruitment agency Airswift told *CNBC* that an estimated 291,500 energy jobs have been lost worldwide since the start of the oil price downturn in 2014. And Janette Marx, the Airswift chief operating officer, said that – once demand for skilled staff returns – employers should anticipate a significant increase in the cost of attracting and retaining talent.

While Goldman Sachs stands by its own estimate that US energy companies will need to attract 80,000 to 100,000 employees, the investment bank believes that high pay in the oil and gas industry will facilitate the effort. Central to Goldman's thinking is its belief that many oilfield services companies have retained experienced staff in lower-rank positions throughout the wave of layoffs, ready to resume their former jobs when oil prices recover and activity ramps up. These "banked" and restored employees would thereupon preserve and build upon the efficiency gains achieved during the downturn.

Gladney Darroh, president of the Houston-based energy recruiting firm Piper-Morgan Associates, is strongly sceptical of the Goldman conviction that re-staffing will not be a problem, and that hiring and training will be confined to the lowest skill levels. "This whole idea that we've got this whole group we have sort of demoted for the time being that are still in the organisation that we can quickly promote back up?" Mr Darroh told *CNBC*, "That's a fairy tale."

Since the layoffs in the industry seem to have peaked, we may not have to wait long to learn which view prevails. Mr DiChristopher noted that, on 7 July, the Chicago-based outplacement firm Challenger, Gray & Christmas reported that US-based energy sector employers cut 42 per cent fewer jobs in the April-June period than in the first quarter.

## Monitoring of Europe's gas and oil pipelines gets an assist from data collected by surveillance satellite

The European Space Agency, a Paris-based intergovernmental organisation with 22 member states, is dedicated to the exploration of space. But a recent ESA report was informed by some decidedly ground-level findings on pipeline inspection. Worldwide, gas and oil pipelines extend 1.24 million miles. Within the countries of the European Union, gas pipes stretch 86,992 miles, while an additional 24,858 miles of pipe carry oil and related products. Final distribution lines service homes and workplaces. In the main this network is not very deep, lying some five feet underground.

According to the ESA, which furnished this information, in Europe almost half of all failures in high-pressure gas transmission pipelines can be traced to excavations, construction work and deep ploughing. Aerial inspections conducted at three-week intervals enable operators to identify 17 per cent of the problems presenting along the pipeline route. The public, with a 37 per cent detection rate, does better. But more consistent and reliable troubleshooting would obviously be beneficial.

Through its Integrated Applications Promotions programme, the ESA helps companies to develop and deploy new space-based services in an operational setting. This spring, the organisation announced one such initiative: a system, from the Dutch startup Orbital Eye, that uses radar images from satellites in combination with smart software to detect suspicious activity in the vicinity of oil and gas pipelines, including the slightest ground movement. ("Monitoring Pipelines from Space," 6 June)

By means of a tablet app, the pipeline operator alerted to a potential threat can then dispatch field personnel to the site. With a connection to a central database via terrestrial networks and satcoms, the app is functional even in desert areas and other remote locations.

Orbital Eye avails itself of the EU's Copernicus programme with its growing constellation of Sentinel satellites, which provide free high-quality observation data, day and night, independent of weather conditions. Sentinel-1B, launched in April, is expected to allow for wider coverage – to regions of Asia, Africa and the US – thus enabling Orbital Eye to extend its reach. The ESA reported that a major African pipeline operator has already signed up for the company's service.

## Elsewhere in oil and gas . . .

On 8 July, with its largest storage facility, Rough, not yet back in service after a 42-day outage, the UK gas system operator said Britain's heating requirements for the winter would be handily met from a variety of sources. According to National Grid, its own available supply of 605 MMSCFD (million standard cubic feet per day) will be supplemented by natural gas imports from Norway, expected to increase from October to March by as much as 18 per cent from a year earlier. Supplies of Dutch and Belgian fuel, as well as LNG imports, are also expected to increase.

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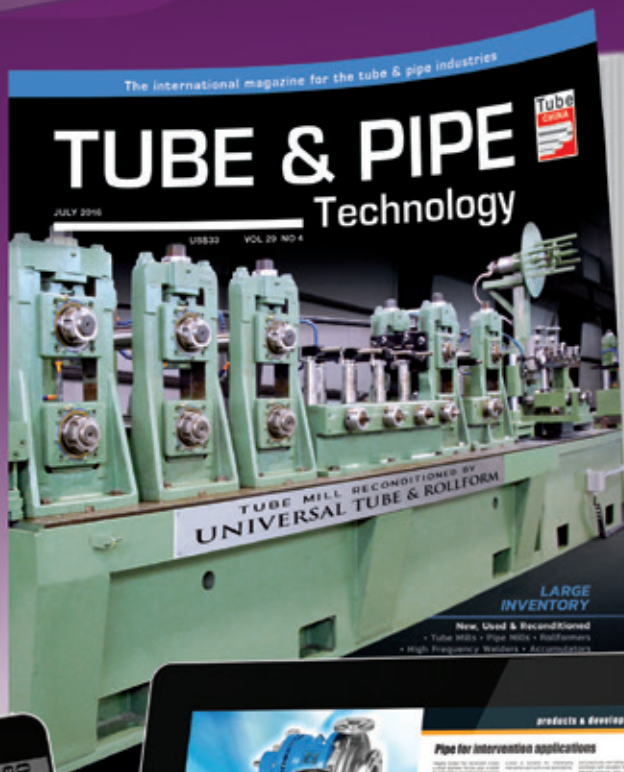


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Norway, Europe's biggest supplier of gas after Russia, reached record production of 117.2bcm (billion cubic metres) last year as European demand rose. The country will achieve similar levels over the next few years, according to Statoil ASA, the biggest Norwegian producer.

The Oklahoma Corporation Commission (OCC), the agency charged with regulating the state's oil and gas industry, said on 13 July that it was investigating a cluster of earthquakes recorded near Blanchard, about 30 miles south of Oklahoma City, including three of magnitude 3.0 or higher. (According to the educational site *UPSeis*, 30,000 such tremors, classified by seismologists as minor, are reported every year in the US).

As a preventive measure the OCC in February issued a series of directives asking the operators of nearly 250 injection wells in northwestern Oklahoma to reduce the amount of wastewater they inject underground by 40 per cent. But the Blanchard area does not come under these directives. As reported on the local *enidnews.com*, the US Geological Survey had recorded at least eight tremors in the area over the week preceding the OCC announcement.

## Energy

### Novel Welsh marine power project could result in a "hallmark" UK global export industry

As described by Jessica Shankleman of *Bloomberg News* (8 July), the world's first tidal lagoons would employ a rock wall 7.15 miles long off the coast of southern Wales to enclose an area in Swansea Bay where 16 turbines generate 320 megawatts of power from the ebb and flow of ocean tides. The turbines would each have a diameter of slightly more than 23 feet, about as wide as the Channel Tunnel.

The turbines planned for Swansea are similar to those deployed in thousands of river-based hydroelectric projects, but have variable speeds and can operate with the tide flowing in either direction, said Mike Unsworth, director of engineering and construction for Tidal Lagoon Power Ltd, the developer. The company is based in Gloucestershire in southwest England, close to the Welsh border.

In the context of expectations that more than a dozen coal-fired plants in the UK will be shut down by 2025, Tidal Lagoon Power is proposing a carbon-free power alternative that it expects will also create thousands of jobs in a depressed area. The \$1.7bn project is currently under review by the British Department of Energy and Climate Change, which could take a decision as early as November. If subsidies are provided, the five-year build-out could commence in 2017.

The Swansea lagoons are to be constructed by the Austrian plant engineering group Andritz AG and General Electric Co, of the US. According to Mark Elborne, CEO of General Electric's UK unit, their completion could mark the first step of a "hallmark" global export industry for the UK.

Ms Shankleman took note of earlier, similar projects in the form of barrages: artificial obstructions run across watercourses to force the current to flow past hydroelectric turbines. Tidal barrages have been built in La Rance in northern France and on Lake Sihwa in South Korea.

The lagoons under consideration for Swansea do not fully obstruct water flow and would have less impact on the environment. *Bloomberg New Energy Finance* confirmed that they would also be cheaper to build than barrages. The project will require about 92,000 metric tons of steel.

### The truly smart city will install wind turbines alongside solar panels to harvest the most renewable energy possible

*ReadWrite*, a website for entrepreneurs, focuses on the Internet of Things (IoT) and the connected world. A contributor, David Curry, recently considered "the IoT revolution" that is raising productivity and saving time – and spotted a missing link. In the rush into connected devices, he asserted, a corresponding increase in energy consumption is being overlooked.

In Mr Curry's view the omission is no minor matter. If smart-city planners are unable to develop renewable systems that provide energy with only minimal intrusion into daily life, their efforts could have a net effect of increasing carbon emissions. In an urban environment – where solar panels are too little, wind turbines too much – a combination of the two technologies could provide a solution. ("Will Wind Turbines and Solar Panels be IoT Juice Of Choice?" 11 June)

As reported by Mr Curry, researchers at Georgia Institute of Technology, in the US, and the National Center for Nanoscience and Technology, in Beijing, China, have achieved just that: a renewable system that utilises both wind and solar power and can be installed on the roof of a city building.

The system is capable of harvesting 8 milliwatts (mW) of solar power and 26mW of wind power, enough to power 3,400 LED lights.

For low-power IoT devices, Mr Curry wrote on *readwrite.com*, "This is perfect as it doesn't require a huge amount of space and is fully renewable energy."

In *ACS Nano*, the peer-reviewed scientific journal published by the American Chemical Society, the team behind the new hybrid system noted that, while solar energy is readily harvested with existing technologies, the large volumes and safety issues associated with conventional wind turbine generators relegate them to remote areas. The considerable wind energy in cities is wasted.

As solar panel sales soar, wind energy has taken a back seat to solar in sustainable-energy circles. The dual setup from the Georgia-Beijing team – yoking both technologies on a city rooftop to individually and simultaneously scavenge sun and wind – holds promise for restoring the parity.

**Dorothy Fabian, Features Editor (USA)**

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Without sacrificing in the smallest degree the benefits won by computerisation, they have effectively erased the distinction between high-volume output and product that suggests the presence of an artisan.





## New Canada facility and machinery

TUBE bending and end-forming technology specialist Addition Manufacturing Technologies has expanded, with a new, larger facility in Brantford, Ontario, Canada. With a total of 22,500ft<sup>2</sup>, the new location is nearly double the size of the company's previous Canada location. The additional space will facilitate growth in manufacturing, engineering and research and development.

In addition to increasing square footage, the company has expanded its manufacturing capabilities with the purchase of a large-capacity boring

mill, which will be used for production of larger machine components for both Addition customers and for Addition's other North American locations.

"The new facility and equipment allows for the production of larger muffler projects than in the past and significantly increases in-house manufacturing," said Doug DeVouge, general manager of Addition Canada. "With the expansion into this new state-of-the-art building, Addition has been able to increase production capacity and efficiency of our silencer making product line, and recently landed orders

from various companies worldwide for which we previously may not have had capacity."

The expansion will eventually increase the company's workforce in Canada. Addition also has manufacturing facilities in the USA, Canada, Mexico, UK, France and China. The company's products serve the automotive, aerospace, furniture and ship building market segments.

**Addition Manufacturing Technologies – USA**

Website: [www.additionmt.com](http://www.additionmt.com)

## Adapting to new bending requirements

INCREASINGLY sophisticated processes and the continuous trend for on-demand production characterise the new tube bending manufacturing, with complex geometries of components, new materials and the call for lower unit costs and the simultaneously rapidly changing batch sizes. Production planners must adapt to this situation, and this ultimately increases the demands on machine operators, who must implement changes reliably.

Schwarze-Robitec has reacted to these developments with a new operating concept and the integration of new functions in its CNC-controlled bending systems. As a further development of the NxG control system for bending machines, which was presented last year, NxG 2.0 simplifies and focuses on the essentials of the operating concept and new opportunities in the networking of bending machines, with increased flexibility in the production of bending products.

In order to make the bending technology fit for 'Industry 4.0', basic modules were integrated into the NxG 2.0 controller. In addition to the standard statistics on bent components, process data can be gathered and evaluated. Integrated sensors provide information on wear values or, for example, the consumption of lubricants, and allow conclusions to be drawn about the expected bending result, the state of the bending tools or the need for maintenance of the machine. This process data is backed up on the corporate network or in the cloud.

The data is collected at a central location and can be retrieved and analysed in strict compliance with data protection. Statistical information is viewed in real time. The state of the machine and the degree of wear of the tools are permanently transparent.

The HMI control panel has also been further optimised. The advanced software with icon interface provides high process reliability and intuitive operation. All operations are clearly arranged and structured. For example, the user finds stylised, meaningful icons for different categories, such as parameters for dimensions, the transport, the tool clamping or guide rails.

"This makes the development of bending programs or the input of tool data easier," explained Bert Zorn, managing director of Schwarze-Robitec. "Moreover, all entries are always inspected for validity, therefore conflicting inputs are prevented."

The CNC NxT 2.0 also includes an advanced user management system. This allows the assignment of different user-levels to employees, from the operation of the tube bending production to complex processes such as production planning, bending equipment and optimisation of the product, or integration into the company's infrastructure.

**Schwarze-Robitec GmbH – Germany**  
Fax: +49 221 89008 9920  
Email: [sales@schwarze-robitec.com](mailto:sales@schwarze-robitec.com)  
Website: [www.schwarze-robitec.com](http://www.schwarze-robitec.com)



*With the new NxG 2.0 controller in addition to the standard statistics on bent components, process data can be gathered and evaluated*

## TubelInspect measuring and inspection

COMMUNICATION between humans, machines and products brings about challenges and has been called the fourth industrial revolution. However, TubelInspect, AICON's tube and wire measuring system, already meets these advanced requirements.

The Menk-Schmehm Group is one example of how TubelInspect can be fully integrated into the

process chain. The company offers its customers the production of cooling radiators, large tanks, special constructions and corrugated tanks, as well as all the possibilities for pipe shaping technology, from one single source.

TubelInspect can be directly linked to all renowned CNC bending machines. If tube measurements indicate that adjustments need to be made to the tube manufacturing process, corrections are directly transmitted to the bending machine via the CNC program.

Günter Sulmann, director global sales, TubelInspect, said: "We are happy to provide our customers with such future-oriented technologies. With TubelInspect and the software platform

BendingStudio, AICON is well-prepared for Industry 4.0 because we efficiently connect different working areas and thus allow for a fast and reliable production process."

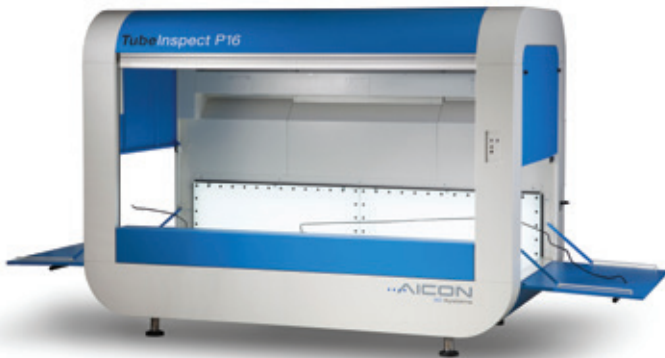
As a part of Hexagon the aim of AICON is to combine technologies and ideas to enable close loop manufacturing.

Sensing, thinking and acting – these are the terms AICON uses to define this method of integrated manufacturing processes with TubelInspect.

AICON 3D Systems is a provider of optical camera-based 3D measuring systems.

The company, founded in 1990, develops and distributes portable coordinate measuring machines for the business areas of inspection and testing including car safety and tube and wire inspection, as well as optical 3D scanners for the measurement of complex surface structures.

**AICON 3D Systems GmbH** – Germany  
Website: [www.aicon3d.de](http://www.aicon3d.de)



TubelInspect P16: Optical tube and wire measuring system for all tube lengths

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## LEADING MAGAZINES

for the tube and pipe industries



## 30 years of international tooling

BEND Tooling Inc, USA, has supplied companies around the world with tube bending tooling since 1986, and is now celebrating 30 years producing die sets, mandrels and wipers for rotary-draw tube bending machines for most makes and models. Its designs are used by production tube bending operations in the automotive, sports vehicle, HVAC

and hydroforming industries. They are also used by speciality tube bending companies because of their consistency in specification, which facilitates frequent changes in set-up.

Bend Tooling states that tube bending companies can benefit from consistent reliability, easier stocking and just-in-time shipping of its inserted mandrels and

wipers in place of traditional solid-body ones. The company also manufactures solid-body mandrels and wipers for those tube bending jobs that require them. This includes bending under extreme high pressures and bending non-round tube.

**Bend Tooling, Inc – USA**  
Website: [www.bendtooling.com](http://www.bendtooling.com)



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## Alltube backs growth strategy with investment

ALLTUBE is a specialist supplier of manipulated tube and pipe components and assemblies. The company's recent growth, with increased sales and a more diverse customer base, has led to the decision to invest in new equipment, including a major investment in the latest tube manipulation system from BLM Group. The introduction of the BLM Elect 102 all-electric tube manipulation system has enabled Alltube to increase its machine capacity and improve manufacturing efficiency.

Alltube now produces a range of manipulated tube products including hydraulic tubing, tubular welded fabrications and hose assemblies for customers in the commercial vehicle, construction equipment, agricultural machinery, mining and automotive after-market parts sectors. The BLM Elect 102 is a ten-axis machine capable of bending tube up to 102mm diameter with a 2mm wall thickness. It is part of a family of seven Elect machines, the largest of which can handle tube up to 150mm diameter.

A key feature of the Elect 102 is its ability to stack eight sets of tooling, which assists in reducing set-up times at Alltube.

**BLM Group UK Ltd – UK**  
Fax: +44 1525 402 312  
Email: [sales@blmgroup.uk.com](mailto:sales@blmgroup.uk.com)  
Website: [www.blmgroup.com](http://www.blmgroup.com)

## Flexible production cells for smart tube processing

PRECISELY produced tubes can help make vital water flow or be used in important medical devices that support the work of doctors. Robust, short hose connections for automotive construction or long tubes, such as those used in air conditioning units, also need to meet many different requirements. Depending on the industry and the application area, the tubes need to be specifically formed, bent and processed.

The networked 't-motion' automation systems by transfluid create combined options for large series operation. "We use our sophisticated technology concepts for tube bending, separation, cleaning and tube forming for the automation systems, supplementing them with loading systems, weld seam control or complete handling," said transfluid managing director Stefanie Flaeper.

"With the easy-to-operate production cell coordinated in this manner, production can start right away. The

principle clearly is one of 'plug and produce'."

The specialist engineers at transfluid integrate easy expansions such as marking facilities, seam detection devices, printers, tightness tests or visual, contact-free camera systems for inspecting geometries or surfaces, brazing and welding units and autofrettage as optional components on request. Loading systems, storage systems, supply of the workpieces or complete handling by robot or linear systems can also be added.

"We coordinate the solution specifically with the customer's requirements, including generation of the layout to achieve optimised material flow and best utilisation," added Ms Flaeper.

Selection of handling also focuses on the highest possible efficiency. The devices used depend on the parts to be produced. Ms Flaeper presented a general principle: "Everything that can be done to the tube in the straight condition

considerably reduces the handling effort. From the bending machine onwards, the robot usually takes over. Linear handling can often be faster, more cost-efficient and easier to reach."

For smooth production flow, transfluid develops its production systems to permit loading of isometric data online from a CAD system and to avoid elaborate programming of robots.

The systems for loading and separation contribute to the performance of 't-motion'. Components (nuts, flanges and screws) are supplied from splitter magazines or rotation separators with presence and position checks. Additionally, supplies from the coil, or by loading table, belt, stage, plate, chain or vibration conveyor are available to match the overall system.

**transfluid Maschinenbau GmbH** –  
Germany  
Email: [sales@transfluid.de](mailto:sales@transfluid.de)  
Website: [www.transfluid.de](http://www.transfluid.de)



*The complete production cells are coordinated with the requirements, including generation of the layout to achieve optimum material flow*

© transfluid

## Automated production cell for 24/7 manufacturing

THE engineering design consultancy Ingenium Integration has developed a multi-function automated production cell for H&E Knowles, a UK-based wheelbarrow manufacturer.

The cell will speed the production of wheelbarrow full and part frames by eliminating many labour-intensive aspects of production.

According to Dave Ashworth, Ingenium Integration's MD, "We have developed automated production cells for a number of production processes involving tube bending. The system under construction is the most integrated system we have designed to date – fully automating most of the stages of wheelbarrow frame production, including tube bending, hole punching, swaging and cut-to-length – and is designed for unattended 24/7 operation."

Ingenium Integration bases many of its automated production cell designs around all-electric tube benders from Unison, its parent company. The system being built for H&E Knowles is a 38mm (1.5") twin head model from Unison's all-electric Breeze range. It features a left and right head on the same carriage that facilitate precision symmetrical bending to reduce cycle times, with an off-set facility to enable asymmetrical bending of the final tight bend at the wheel end of wheelbarrow frames, while avoiding collision with machine architecture during the process.

The production cell comprises a tube bundle loader, tube orientation station with seam detection, intermediate dual-arm loader, bending machine and several articulated robotic handlers, as well as swaging, hole punching and

cut-to-length stations. It fully automates the entire wheelbarrow frame manufacturing process, from raw tube material handling through to final pre-paint finishing and quality inspection.

The cell was developed at Ingenium Integration's design centre in Manchester, UK, and manufactured and assembled in a facility at Unison in Scarborough, UK. Ingenium Integration is also able to call upon Unison's expertise in all-electric tube bending technology to help solve customers' fabrication problems. The company holds an integration licence for the five-axis parallel kinematic machines (PKMs) developed by Swedish company Exechon.

**Ingenium Integration Ltd – UK**

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## 适合Industry 4.0 (第四次工业革命) 时代的弯曲机

日益复杂的工艺以及按需生产的持续趋势使管道生产有了一些组件形状更复杂，使用更多新材料以及呼吁降低单位成本，同时快速变化生产批量大小等新特性。生产计划者必须适应这种情况，最终对机器操作者要求也不断提高，他们必须可靠地实现这些改变。

Schwarze-Robitec公司利用新的操作理念以及在数控弯曲系统集成一些新的功能来应对这些发展。

NxG2.0系统是去年才提出来的弯曲机NxG控制系统的进一步发展，该系统简化并侧重于操作理念以及弯曲机联网中的新机会，者增加了弯曲产品生产的灵活性。

为了使弯曲技术适合“Industry 4.0”，NxG2.0控制器内集成了基本模块。除了弯曲组件的标准统计，还可以收集和评估过程数据。集成传感器可提供一些信息，如磨损值，或者如润滑剂的消耗，而且还可以提供预期弯曲结果的结论，弯曲工具的状态或者机器是否需要保养等信息。这些过程数据备份在企业网络或云端。这些数据收集在中央单元，可以严格按照数据保护进行检索和分析。这些统计信息可以实时查看。机器状态和工具磨损程度是永久透明的。

人机界面控制面板也得到进一步优化。先进的软件带图形界面，可

提供极高的过程可靠性以及直观的操作。所有操作都是清楚排列和布置的。比如，用户可以找到不同类别的程式化的有意义的图标，如尺寸参数，运输、工具夹或导航。

Schwarze-Robitec董事总经理Bert Zorn解释说：“这使得弯曲程序开发或工具数据的输入更简单了；而且所有的录入都是能检查有效性的，因此可以防止输入冲突。”

数控NxT 2.0还包括一套先进的用户管理系统。可以为员工分配不同的用户级别，从管道弯曲生产操作到复杂的过程，如生产计划、弯曲设备和产品优化，或者是集成到公司的基础设施中。

Schwarze-Robitec GmbH – 德国

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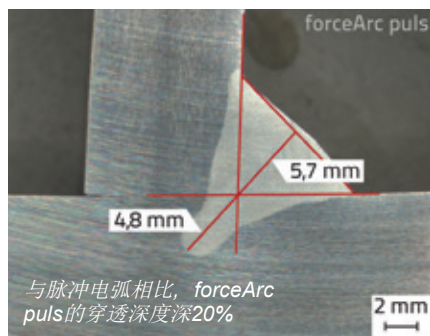


新型NxG2.0控制器除了弯曲组件的标准统计，还可以收集和评估过程数据



## 新的焊接工艺带来了效率优势

来自EWM AG公司的新型forceArc puls焊接工艺将forceArc的优势和脉冲电弧的优点结合起来，具有更广泛的适用性、较低的热量输入以及更高的焊接速度等特点。



点。新型MIG/MAG焊接工艺适用于焊接非合金钢或低合金钢以及铬镍钢。其深熔透能力非常适合单面和双面焊透。与脉冲电弧焊相比，在焊接厚度相同的情况下，该工艺焊接速度快20%。

新工艺还具有热输入量较低，褪色减少以及变形度最小化等特点。而且电弧几乎无飞溅，这样返工和矫直工作量将减少50%，在这加工铜镍钢时具有明显的优势。从标准的气体保护焊切换到这种新型焊接工艺也很简单。过程中极好的润湿使其处理非常简单，几乎不需要练习时间，而且焊接烟尘减少，为操作者带来了极高的验收标准。

Mesa Metall-Stahlbau的董事总经理Pierre Mack评价道：“我们已经设法将

焊接和打磨生产时间减少57%。他们公司使用传统焊接工艺需要781个工时来生产四台用于消防和救援列车的水箱；而引进新型EWM焊弧和EWM技术只需339小时。如果不能以这种方式焊接，我们将错过很多合同。”

forceArc puls也为很多应用带来了技术优势。按照EN 1090标准工作的用户发现熔透深度使焊缝强度更大。有效的焊缝总厚度比标称的焊缝厚度厚，这样常常单个焊道就能完成焊接。

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## 采用Tier 4发动机的熔接机

MCELROY的旗舰产品TracStar®系列推出了新型机器，能大大减少排放并提供极好的自动化技术，使用户能够满足空气质量和数据记录更严格的规定。

新型TracStar 900 Series 2 Automatic熔接机采用Cummins US EPA Tier 4/EU Stage IIIB发动机，能够燃烧超低硫柴油，使燃烧更清洁，运行更安静，而且效率更高。

熔接功能是由Coach®吊架自动控制的，而且可以将焊缝报告上传到McElroy DataLogger® Vault™，以便安全的储存、分析和管道完整性的验证。McElroy产品开发主管Jason A Lawrence, PE 表

示：“我们从全球杰出的供应商那里为这台自动化机器提供了先进的柴油机，这样客户就能够为所有市场的排放法规做好准备，包括欧洲的严格标准，而且能够获得顶级的发动机服务和支持；而且能够上传焊缝数据来显示管道是正确熔接的也变得越来越重要，提供了更大的责任性以及竞争优势。而这台机器正是这样做的。”

设计师们重新设计了整流罩以及重新排列了组件，这样更便于对TracStar 900 Series 2 Automatic的发动机进行维护。该机器能够按照很多国际熔接标准熔接340到900毫米（12"到36" OD）的

热塑性塑料管道，并包括所有TracStar机器正具有的特性。

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## 管道行业用机器人倒棱机

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RU系列机用于加工外部和内部倒棱或去毛刺(例如切割后)。RU系列机能提供均匀的倒棱，即使是管道圆度和同轴度缺失的情况下。高精度度、可重复性以及生产力是RU系列机器的主要优势。机器人轨迹适合于产品(形状和大小)——因此当产品形状改变时也不需要更换刀具。相同的机器和刀具能够加工更大范围的产品(从10毫米到300毫米)。Ru系

列还提供多个集成机会：直管或弯曲管道，管道两端都可以几根管道同时或先后进行倒棱，而且可以是方形、矩形或椭圆形。

操作员在触摸控制面板上输入数据(管道内径和外径、形状、旋转次数、步骤、深度、磨削尺寸和速度)。

芯轴的转速是气动控制的。管道由管夹钳住并送入可移动的停止站作为参考位置。在检测到停止站后，夹具关闭，这样在过程中可以找到中心位置并固定住管道。一旦管子被夹住，其位置就确保是在加工轴上。然后停止站向下移

动，机器人开始循环工作。过程中，管道仍然保持不动，因为有夹钳。芯轴开始离开管道几毫米，然后在过程中慢慢进入管道。可以提供干净、受控且可重复的棱角。

还包括其他一些选项，如吹扫系统、在线/离线集成、喂料/接收台，多个管道夹钳，能够同时对几根管道进行倒棱。

Provea – 法国

电子邮件:

contact@provea-machine-tube.com

网址: www.provea-machine-tube.com

## 140秒完成47个弯曲

对于长度达1500毫米，直径小到18毫米的制动系统、空调装置以及类似产品生产线的生产在遇到弯曲技术时是极具挑战性的，尤其是运输。为了更经济，生产过程需要快速，精确度和质量也是

很重要的因素。作为最近的一个项目的一部分，transfluid的团队研发了管道加工系统，包括机器人材料搬运以及在140秒时间里能够对长度为4500毫米的管道完成47个弯曲。在开发这一解决

方案时，团队必须满足的另一个规范要求是管道必须是已成型的或配备了法兰的。

这个过程包括在进料器里插入一捆管道，再根据法兰定位分别由对称旋转进行导向。然后两个机器人其中的一台将管道捡起，转移到可移动跨度设备上，这里有专门为较长的管道设计的具有合适高度的支架系统。

跨度设备使机器人能够在平行一边或两边搬运管道。这样也加快了程序。搬运每根管道所需的时间，即使是这个长度，常常不超过三秒。两台机器人都有七个轴，带驱动系统，可以左/右弯曲。

transfluid的这个弯管概念的另一个优点是单线图数据可以直接从CAD系统上传到网上，意味着机器人无需复杂的编程。

transfluid Maschinenbau GmbH – 德国

传真: +49 2972 9715 11

电子邮件: sales@transfluid.de

网址: www.transfluid.de



管道弯曲系统和机器人搬运的结合能够处理长度达4500毫米的管道。



## 85秒内测量10根管道

在瑞典南部的Proton Engineering公司是第一批已开始使用AICON的新型管材和线材测量系统Tubelnspect P16的客户之一，在使用新系统几个月后，公司对新的测量工艺给出了肯定的总结。

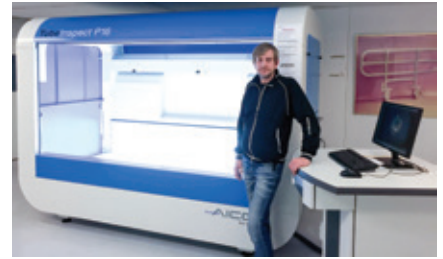
Proton Engineering公司首席执行官Fredrik Ottoson表示：“这是我们为客戶提供良好质量迈出的又一步。我们的生产已经很有成本效益，这也將为客户带来好处”。

配备采用GigE技术的16帧高分辨率相机以及更大的测量区（2600mm x 1250mm x 1250mm）使Tubelnspect P16适用于长度2500毫米的管材和线材。7米长的管道可以通过几个步骤的重

新定位完成测量。一次测量大约需要10秒。Proton Engineering的团队已经能够在85秒内成功测量10根管道。Proton Engineering质量和环境经理Roger Olofsson已经在公司工作了25年，在计量、接收检查和样本方面有着广泛的经验。他对该系统的能力和在重量保证方面的优势有着深刻的印象。

Olofsson先生表示：“该投资將加快和确保公司过程中的测量。由于是非接触式测量，因此测量非常准确，而且不管是谁操作测量结果都一样。”

Proton Engineering是各种复杂产品的全方位供应商，包括管道弯曲、管端成型、金属板材加工和高度自动化



Proton Engineering测量工程师Richard Johansson,负责Tubelnspect P16

的焊接，以及汽车和工程行业的完整装配。

**AICON 3D Systems GmbH – 德国**  
 传真: +49 531 58 000 60  
 电子邮件: info@aicon.de  
 网址: www.aicon3d.de

## 2000和6000系列激光测量仪——适用于各种应用

二十多年来，Sikora公司一直使用激光技术结合用于2000和6000系列激光测量仪的CCD传感器来测量软管和管道直径。与那些有时是以光与影为基础的其他测量方法相比，在测量透明和不透明软管时Sikora测量仪测量精度值更高。

Laser Series 6000系列测量仪测量精度和可靠性都达到最高，这对直径测量设备来说是非常关键的。Sikora测量仪每秒能够测得5000个测量值，而且每个测量值精度都非常高，可提供极佳的线性控制以及可靠的统计数据。该设备测

量速度非常高，因此可以同时检测凹陷和凸起。对于直径0.2毫米到78毫米的产品也可以实现极高的精度和可重复性。独特的智能软件结合强大的高端硬件使Laser Series 6000系列还能够测量透明产品的直径。

这些应用对于对最终产品要求极高的制造商来说非常有益。在生产敏感产品过程中，如医疗软管，遵守规定的尺寸以及绝对品质是满足医疗市场要求所必不可少的。Sikora还为Laser Series 2000 T系列三轴测量设备提供高品质

测量技术，用于直径测量，包括最大和最小值以及椭圆度。对于0.2毫米到100毫米的直径来说，极高的精度、可靠性以及连续性功能是T测量头最主要的好处。

Laser Series 2000 T系列三轴测量设备还配有专用的硬件和软件，因此能精确测量透明产品的直径和椭圆度。

**Sikora AG – 德国**  
 电子邮件: sales@sikora.net  
 网址: www.sikora.net

## 管道直线度测量仪

总部在瑞典的LIMAB公司为金属行业生产激光测量系统。公司凭借1D和2D传感器、软件工程、设计和系统制造成为非接触式激光测量的开拓者。LIMAB为钢铁行业开发了几种创新型测量解决方案，如平直度，直径、椭圆度、长度、厚度以及宽度测量。

TubeProfiler S用于直线度、长度、直径、椭圆度和形状测量，已成为管道供应商受欢迎的质量控制装置，而且不仅是在石油和天然气领域。

LIMAB最近增加了TubeProfiler S的细分市场，还包括了精密钢管和液压管。

主要的测量系统包括管道两端、管道局部平直度和整体平直度的扫描。紧凑的系统能够测量管道以上所有特性。

一个重要的优势是可用在线系统代替高成本、耗时且不准确的手工测量，该系统能记录和储存所有成品管道100%的数据，包括终端用户证书。

标准的TubeProfiler有几个不同的版本，适用于管道加工厂冷加工和热加工应用。测量头适用于无缝钢管、UOE焊管以及电阻焊纵缝焊管。一个探头可以测量从最小到最大直径所有不同的尺寸。

最终用户对平直度测量要求越来越高，尤其是较大的管道，激发了LIMAB的开发工程师想出了这一创新方法。

平直度测量结果实时显示为数字、趋势图以及2D和3D图形，便于查看。为了长期监测和过程改进，数据库开通极好的生产数据源。整个系统将输出管道局部直线度或整个管道直线度以及长度，如果超出公差范围或警戒值，系统会给出报警信号。所有数据连同其他有用的信息一起显示，如外径、椭圆度和形状。

TubeProfiler S能够非常轻松地安装在现有生产线上，以及使用内置起重钩和

可快速调换的电连接器轻松地重新安装在轧机其他部分上。

**LIMAB AB – 瑞典**  
 传真: +46 31 58 33 88  
 电子邮件: sales@limab.se  
 网址: www.limab.com



## 在大型塑料管道生产中精确测量直径、椭圆度、壁厚以及垂挂的毫米波技术

Sikora Holding GmbH & Co KG公司主管Harald Sikora

### 介绍

在生产大直径厚壁塑料管道时，产品质量和减低材料成本具有最高的优先级。规范和标准精确地定义了管道直径和壁厚最小和最大的允许值。此外，垂挂的确定也起着重要作用。因管道挤压标准和要求不断增加，管道生产商们在线生产中生产使用各种测量和控制装置来确保质量。

Sikora与高频物理和雷达技术弗劳恩霍夫研究所合作（FHR）以及南德塑料研究所（SKZ）合作开发了以毫米波技术为基础的新技术，可以精确地非接触式在线测量直径大于120毫米的大直径塑料管道外径和内径、椭圆度、壁厚以及垂挂。该测量系统的创新理念适应挤出塑料特点而且不需要操作工进行任何校准。这种新型毫米波技术能够提高产品质量，确保挤塑过程中主要的材料和成本节省。

### 用于挤塑过程中塑料管道尺寸测量的技术

如今，有很多不同的技术用于塑料管道生产过程中的质量保证，如光学法，例如用于检测直径的激光仪，测量同心度和壁厚的X射线。还有传统技术，如超声波，也可以测量管道尺寸，但常常受到一些功能限制。还有一种技术是和太赫兹脉冲技术一起用于质量控制。该方法利用强大的光纤激光器直接对测量目标产生太赫兹脉冲。反射回波打到内外边界层，从而确定壁厚。

### 测量大型管道的毫米波技术

使用本文介绍的毫米波技术可以不受环境或材料影响精确地测量大型管道。

近年来，关于测量精度通过研究毫米波段频率的计量应用取得了巨大成功。然而，测量结果不能用于圆柱产品涂层厚度检测。新开发的毫米波技术为各种挤压管道的公称尺寸以及外径、椭圆度和壁厚的可靠测量创造了先决条件。

在不知道挤压材料的性质和温度的情况下，该系统能在四周几个不同的位置同时测量轮廓尺寸以及壁厚。而且，多层管道每层的厚度也能精确测出。因此，该系统代表了大型管道未来质量保证的关键技术。毫米波段测量是基于FMCW运行时间方法的。管道周围布置了几台静止的或旋转的收发器，可以连续发送和接收调频毫米波。从不同的运行时间方法来确定产品的尺寸。边界层，例如塑料管道每个前后面，可以反射这些无线电波。收发器的接收器能够检测并调解输出这些信号。这些信号包含不同材料边界层之间的距离，这就是

内径、外径、椭圆度、壁厚和垂挂。在对每个传感器接收到的信号进行运算处理后，所需的测量结果可以可视化并且可以实时控制不同的管道尺寸。连接的处理系统获取这些测量值并用数值和图形显示。它还包括一些全面的趋势和统计信息。

### 毫米波技术优化管道质量并节约时间和成本

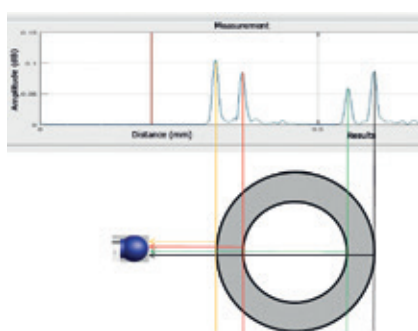
使用毫米波技术时产品温度对结果没有影响，因此该系统可以用于热测量，也可用于生产线冷端的最终质量控制。直接在第一次冷却后，Centerwave 6000就能提供精确的内径、外径、椭圆度、壁厚，尤其是垂挂等信息。毫米波技术可用于测量所有塑料管道，如PE、HDPE、HDPE、PP、PA6以及PVC等。

如果我们假设一条生产线生产外径400毫米、壁厚27.5毫米的管道，生产线速度为0.5米/分钟，机器操作工大概10到30分钟左右就能得到精确的测量结果。

相比之下，利用超声波技术对高温塑料进行壁厚测量是一份特殊的挑战。超声波的温度依赖性，使其需要温度补偿。但我们的目标是在生产过程中尽可能早的得到精确可靠的管道尺寸信息，以便必要时采取措施以避免交付失败。此外，在生产过程中有必要尽早地接近管道最小的允许尺寸以生产出最小的机体重量。较低的机体重量节省的成本常常在竞争中起到决定性作用。挤出塑料管道的材料成本占总制造成本的90%。

根据生产线吞吐量、使用的材料类型以及基本规范，在最小和最大允许的管道尺寸间，年节省潜力可达上千万左右范围。此外，标准塑料管道的生产可确保管道无缺陷加工。比如，高品质管道焊接也能轻松地完成。因此，毫米波技术的应用大大节省了时间和材料成本，并确保生产出高品质的最终产品。

### 评估收到的信号并确定管道尺寸



基于毫米波技术的系统用来测量大型管道直径、椭圆度、壁厚和垂挂

### 毫米波技术应用领域

毫米波技术适用于直径从120到2500毫米的所有类型的塑料管道，比如用于输送水、天然气、化学品和油等介质的管道。尤其是一些常用塑料制成的管道，如PE、HDPE、PP、PA6、以及PVC等。该系统能提供非常精确的测量值，即使是针对壁厚200毫米的管道。另一个应用领域是可以测量单层和多层管道。在生产过程中，存在的风险是熔化物从管子工具上流下来，这样由于重力而对管子壁厚的分布产生不良影响。这就是所谓的垂挂，而毫米波测量技术能测出垂挂。通过显示和控制装置，机器操作工能立即接收到生产过程中的信息并采取行动。

### 结论和展望

大型塑料管道生产对质量的要求越来越高。规范明确规定产品生产尺寸。塑料管道挤出生产过程中精确度和可靠的质量保证正变得越来越重要。通过使用以毫米波技术为挤出的新系统进行热测量以及最终质量控制的冷测量，产品内径、外径、椭圆度、壁厚和垂挂等参数可以持续在线监控。该方法适用于适用于各种不同的材料，如PVC。弯曲产品表面以及多层管道壁厚都能精确测量和确定。因此，毫米波技术的引进几何处理系统，能优化过程，提高管道质量，最小化材料消耗以及节省时间和节约成本。

Sikora AG – 德国

传真: +49 421 48900 90

电子邮件: sales@sikora.net

网址: www.sikora.net

# Resonance – the destructive force behind carbide saw breakdowns

by Willy Goellner, chairman and founder – Advanced Machine & Engineering/AMSAW

In this second of three articles AME focuses on the destructive force behind carbide saw breakdowns with an in-depth look at the resonance.

As part of the team that invented the first billet saw using carbide tipped circular saw blades and the founder of the AMSAW machines, my design team has learned throughout the past 50 years that success in carbide sawing comes from a solid understanding of four factors: vibration, resonance, damping and stabilisation.

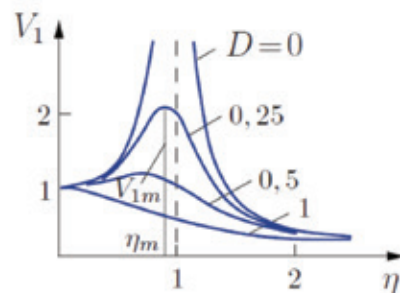
It is a nightmare scenario in your facility – production has stalled because the factory is starved of saw cut blanks. Your carbide saw operator has just finished explaining that your high-production saw is down. The reason you purchased a carbide saw in the first place was for the high production output, but with a damaged machine your output has plummeted to zero.

As your maintenance staff begins troubleshooting the cause of the damaged machine components and broken carbide tips of the saw blade with perplexed looks on their faces, your most experienced maintenance manager approaches and explains: “The only explanation I can think of is – resonance.”

## What is resonance? How do I prevent resonance from ruining my machine?

Resonance occurs when a vibratory system is subject to an external pulsing force and the excitation frequency is the same as the natural frequency of the system. When this happens, and there is no damping in the system, amplitude continues to grow infinitely. Typically, machines are designed with some damping in the system so that the amplitude reaches a finite peak value. Without proper damping the displacements can escalate to a point where the system can no longer support its function and this can lead to complete destruction of the system.

Think of your machine. The base, normally a heavy casting or weldment, has a certain natural frequency depending on mass and stiffness. Experienced machine designers will try to create a sufficient spread between the natural frequencies of the base structure and the exciting frequency. But, even in the case of minor resonance, the tool life will be affected. The



The magnification factor of the amplitude as a function of the frequency ratio. The curve parameter is the dampening ratio

History teaches some great examples of how important the knowledge of resonance is. In 1940 the Tacoma Narrows Bridge collapsed due to strong wind that caused the bridge to vibrate in a torsional resonance mode



problem can be significantly reduced by filling the base with a compound, which dissipates vibration energy as thermal energy to dampen the system.

Consider the tool, in this case a circular carbide-tipped saw blade. These blades are very stiff in the cutting direction (torsional stiffness), but laterally, 90° to the blade plane, the blades are very weak. To demonstrate this yourself, hit the blade body with an object when it is mounted on the drive spindle and see how long it will vibrate if it is not restrained by other means. Imagine the affect this can have on each cut.

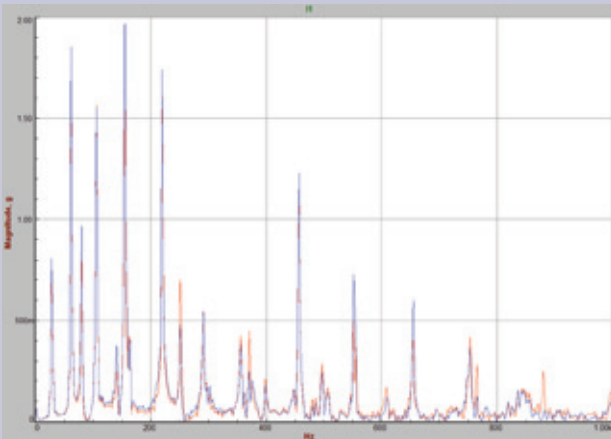
In extreme cases, when sawing hard, high alloy steel, the carbide tooth can have an impact force of up to 4,500N when it contacts the material. The harder the material, the harder the carbide tooth must be to resist wear and obtain an acceptable tool life. On the other hand, the harder the carbide tooth, the more brittle it becomes and, of course, brittle materials are debilitated by vibration forces.

Smaller diameter saw blades are not as challenged, because the vibration amplitudes are smaller and the natural frequency is higher. The amplitudes of the vibration increase proportionally with the blade diameter, so the larger the saw blade, the more challenging it becomes to suppress the vibration amplitudes.

## Experimental modal analysis (impact test)



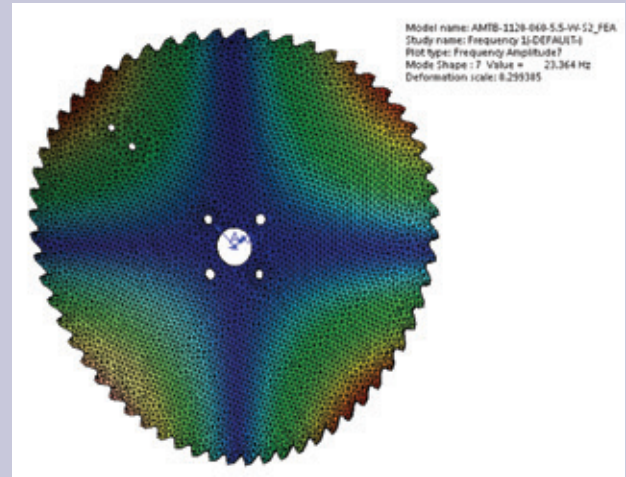
You hit the blade with an impact hammer. Accelerometers will track the transfer function with the help of a data acquisition device (DAQ). Hint: In case you don't have a DAQ available, you can also use an oscilloscope and do the signal transformation (Fast Fourier Transformation) in Excel. As a result, you can see the lowest natural frequency, for example at 23Hz in the chart below.



## Finite element modal analysis

The equations that arise from the modal analysis are the same that can be found when solving eigenvalue problems.

- 1) Every eigenvalue (natural frequency) has a corresponding eigenvector (mode shape).
- 2) The benefit when using FEA is that you do not only get the frequency value, but you can visualise the mode shape easily.
- 3) The end result is very close to the measurement of 23Hz.
- 4) This mode, which is represented by node diameter 2 and node circle 0, is one which causes most damage to the teeth.



## Calculation using Kirchhoff plate theory

Last but not least, you calculate the natural frequency of the blade and get a feeling for the driving parameters. If you use Kirchhoff plate theory in polar coordinates, and replace the static load with negative mass acceleration, by solving the Bessel differential equation you will end up with the following formula for the natural frequency  $f_1$ .

1) Calculate the flexural rigidity, K

$$K = \frac{E \cdot t^3}{12 \cdot (1 - \nu^2)} = \frac{2.1 \cdot 10^{11} \cdot (5.5 \cdot 10^{-3})^3}{12 \cdot (1 - 0.33^2)} = 3,267 \text{ Nm}$$

$\lambda^2$ = tabulated value for the boundary condition and mode	D = Diameter (1,120mm)	t = Thickness (5.5mm)
E = Young's modulus of steel	$\nu$ = Poisson's ratio for steel	$\rho$ = Density for steel

2) Calculate the natural frequency

$$f_1 = \frac{\lambda_1^2}{2\pi \cdot (D/2)^2} \cdot \sqrt{\frac{K}{\rho \cdot t}} = \frac{5.253}{2\pi \cdot \left(\frac{1.120}{2}\right)^2} \cdot \sqrt{\frac{K}{7,900 \cdot 0.0055}} = 23\text{Hz}$$

Substituting the equation for K into the equation for  $f_1$  leads to  $f_1 = \xi_1 \frac{t}{D^2} \sqrt{\frac{E}{\rho}}$

$\xi$  is a combined factor which is dependent on the boundary condition, the mode you are looking for, and other constants. This shows how theory can prove practical testing and explains that the natural frequency increases linearly with the thickness ( $t$ ) and decreases by the square of the diameter ( $D$ ), as the short formula for  $f_1$  shows.

One solution to this problem is to make the blade thicker, but thicker blades with wider kerfs create more waste material and, thus, make the sawing process more expensive. Thicker blades also require more horsepower to cut through the material, demanding heftier, more expensive carbide saws.

It is useful to take a closer look at a saw blade. It is essentially a circular plate from a structural standpoint. In our last piece we explained that only lower resonant frequencies have a damaging effect on sawing.

So how can you measure the critical resonant frequency of a blade in cycles/sec (Hz)? On page 114 are three different approaches that complement each other, and when used together can verify the result.

Now, since we know the methods to obtain the natural frequency of the blade, we can compare it with the tooth pass frequency of the blade. You must keep in mind that the blade mounted on the drive hub usually has different boundary conditions and therefore a different natural frequency to the free annular plate we analysed before.

Still, let us assume you are cutting some alloy steel with a cutting speed ( $v_c$ ) of 82m/min and a sawblade (as mentioned before) of 1,120mm diameter with 60 teeth.

$$n = \frac{v_c}{D\pi} = \frac{82}{1.12\pi} = 23rpm$$

If the saw blade with 60 teeth will run at 23rpm you will have a tooth pass frequency of 23Hz. **Matching frequencies – that is your problem**, if it matches the natural frequency  $f_1$  of your carbide-tipped saw blade. A slight change of the saw blade RPM will spread the frequencies and improve your machine performance without compromising your tool life.

When you next order saw blades you can also increase or decrease the number of teeth a small amount and get a better performance.

It is much easier to make a change in RPM than it is to repair a poorly designed machine, but without the knowledge of the damaging effect of resonance and how to make the appropriate adjustments to avoid it, you can expect a downtime crisis.

## Conclusion

- Carbide saws are relatively simple machines, but modern engineering practices are still used to uncover hidden performance-robbing factors, such as resonance.
- Modern engineering aids like data acquisition devices (DAQ) and finite element analysis (FEA) features in CAD software are used to uncover issues during the design of industrial machinery.
- There is no substitute for practical engineering and industrial machinery experience. Modern technology only serves to facilitate quicker calculations.

- A solid knowledge of the dangers of resonance allows you to know the important parameters that need to be adjusted to benefit from longer tool life and higher productivity.
- Experienced machine designers analyse all vibration sources using stabilising and damping aids to improve the sawing process.

'Methods for stabilising and damping' will be discussed in the next issue.

Advanced Machine & Engineering/AMSAW – USA  
2,500 Latham Street  
Rockford, IL 61103, USA  
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Поскольку мы изобрели первые карбидные пилы в 1969 году, дизайн не сильно изменился, но технология, безусловно, изменилась, как бывшие эксперты для **Вагнер** и **Metalcut**, у нас есть все чертежи и документацию необходимо **реконструировать** любые пилы **Amsaw**, **Вагнер** или **Metalcut** на рабочем месте.

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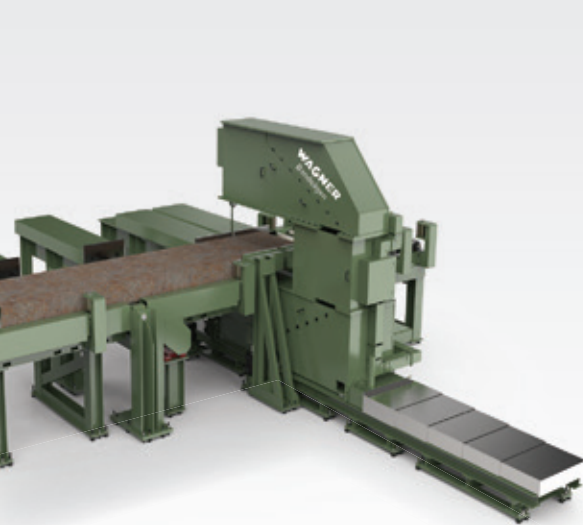
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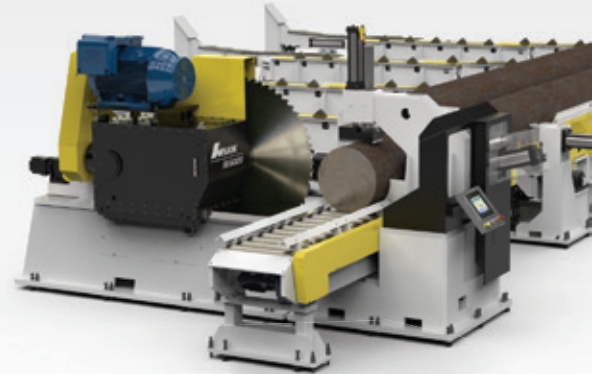
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